

I-405

CORRIDOR PROGRAM NEPA/SEPA DRAFT EIS

DRAFT FLOODPLAIN EXPERTISE REPORT

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Revised August 2001

I-405 CORRIDOR PROGRAM

Draft Floodplain Expertise Report

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Draft Floodplains Expertise Report

SUMMARY

This discipline report is an assessment of the potential impacts to floodplains of four proposed action alternatives and a No Action Alternative for the I-405 Improvements Project. The analysis is conducted at a programmatic level to contribute to the project decision making process.

Within the project study area there are eighteen floodplains that are either crossed or are adjacent to I-405, potential high-capacity corridors, and the arterials being evaluated by this report. In situations where the floodway component of the floodplain is presently crossed, the floodway is spanned or bridged so that flows are not impeded. Road-related structures within the floodplain are proposed so that there will be a zero increase in flood elevation from existing conditions.

The No Action Alternative includes committed projects which are part of all the alternatives. However, the impacts of the No Action Alternative projects are only counted under the No Action Alternative. The total impacts of the other alternatives above today's condition needs to be added with the No Action Alternative.

Each of the alternatives, including the No Action Alternative, cross at least one floodplain, and, in one alternative, fourteen floodplains are either entered or crossed. In each situation where there is potential for impacts to a floodplain, projects can be designed, using conventional engineering techniques, so that the floodway can be avoided and a zero increase in flood elevation can be maintained. As a result, each alternative could be constructed and operated so that there would be no substantial direct, indirect, or secondary impacts to floodplains in the study area. Table 1 provides a summary of the potential impacts for each of the alternatives.

Table S.1: Summary of Potential Impacts to Floodplains in the Study Area

Alternative	Floodplains Affected	Floodplain Crossings	Potential Impact Length	Mitigation
No Action Alternative	6 project affect 5 floodplains	5	13,950	Walls, bridges, storage, overflow channel
Alternative 1 ^a	17 projects affect 14 floodplains	17	17,700	Walls, bridges, storage
Alternative 2 ^a	31 projects affect 14 floodplains	36	30,325	Walls, bridges, storage
Alternative 3 ^a	30 projects affect 14 floodplains	35	30,425	Walls, bridges, storage
Alternative 4 ^a	30 projects affect 14 floodplains	36	25,225	Walls, bridges, storage

^a The impacts in these alternatives are in addition to impacts from the No Action Alternative.

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1. INTRODUCTION

1.1 Report Organization and Scope

This report presents an evaluation of the potential impacts of five alternative approaches to traffic and transportation-related improvements in the Interstate 405 (I-405) corridor on floodplains.

1.2 Overview of I-405 Corridor Program

Construction of the 30-mile Interstate 405 (I-405) freeway in the early 1960s as a bypass around Seattle for Interstate 5 (I-5) traffic also opened the rural, agricultural countryside east of Lake Washington to commercial and residential development. Interstate 405 currently ranges from six to ten lanes along the 30-mile corridor, and it is the designated military route through Seattle, as Interstate 5 was deemed too constricted (see Figure 1.1). Construction of the Evergreen Point (SR 520) floating bridge in 1963 further set the stage for rapid and substantial changes on the Eastside.

Today, I-405 has changed dramatically from a Seattle bypass to become the region's dominant north-south travel corridor east of I-5. More than two-thirds of the total trips on I-405 begin and end in the corridor itself. The remaining third have strong ties with the communities along SR 167 to the south of the study area, and with developing areas to the east within the urban growth area of King County. However, as the regional importance of the I-405 corridor has grown, it has become increasingly evident that worsening traffic congestion within the corridor has the potential to create serious adverse effects on personal and freight mobility, the environment, the state and regional economy, and the quality of life.

In response to these and other concerns, the Washington State Department of Transportation (WSDOT) has joined with the Federal Highway Administration (FHWA), Federal Transit Administration (FTA), Central Puget Sound Regional Transit Authority (Sound Transit), King County, and local governments to develop strategies to reduce traffic congestion and improve mobility in the I-405 corridor from Tukwila in the south to Lynnwood in the north.

The I-405 Corridor Program is a cooperative effort involving over 30 agencies that have responsibilities for planning, regulating, and implementing transportation improvements in the 250+ square-mile corridor. The decision to be made through this combined National Environmental Policy Act/State Environmental Policy Act EIS is to identify the best mix of modal solutions, transportation investments, and demand management to improve movement of people and goods throughout the I-405 corridor, reduce foreseeable traffic congestion, and satisfy the overall program purpose and need.

The programmatic I-405 Corridor Program EIS focuses on broad corridor-wide issues related to travel mode and transportation system performance. This is consistent with the program objective to enable program decisions focusing on mode choice, corridor selection, general location of improvements, and how combinations of improvements may function together as a system to solve corridor-wide transportation problems. A programmatic level of analysis is appropriate and necessary at this early stage in the decision-making process, when many project-level design details would not be meaningful in evaluating effects on

mobility and environmental quality across such a large area. Subsequent environmental analysis, documentation, and review will be prepared to enable decisions regarding site-specific, project-level details on alignments, high-capacity transit technology, project impacts, costs, and mitigation measures after a preferred alternative has been identified.

1.3 Need For the Proposed Action

The need identified for the I-405 Corridor Program is:

To improve personal and freight mobility and reduce foreseeable traffic congestion in the corridor that encompasses the I-405 study area from Tukwila to Lynnwood in a manner that is safe, reliable, and cost-effective.

The following sub-sections expand upon the issues and trends that influence the need for the proposed action, particularly with respect to travel demand and traffic congestion, and the attendant effects on freight mobility and safety.

1.3.1 Growth in Travel Demand

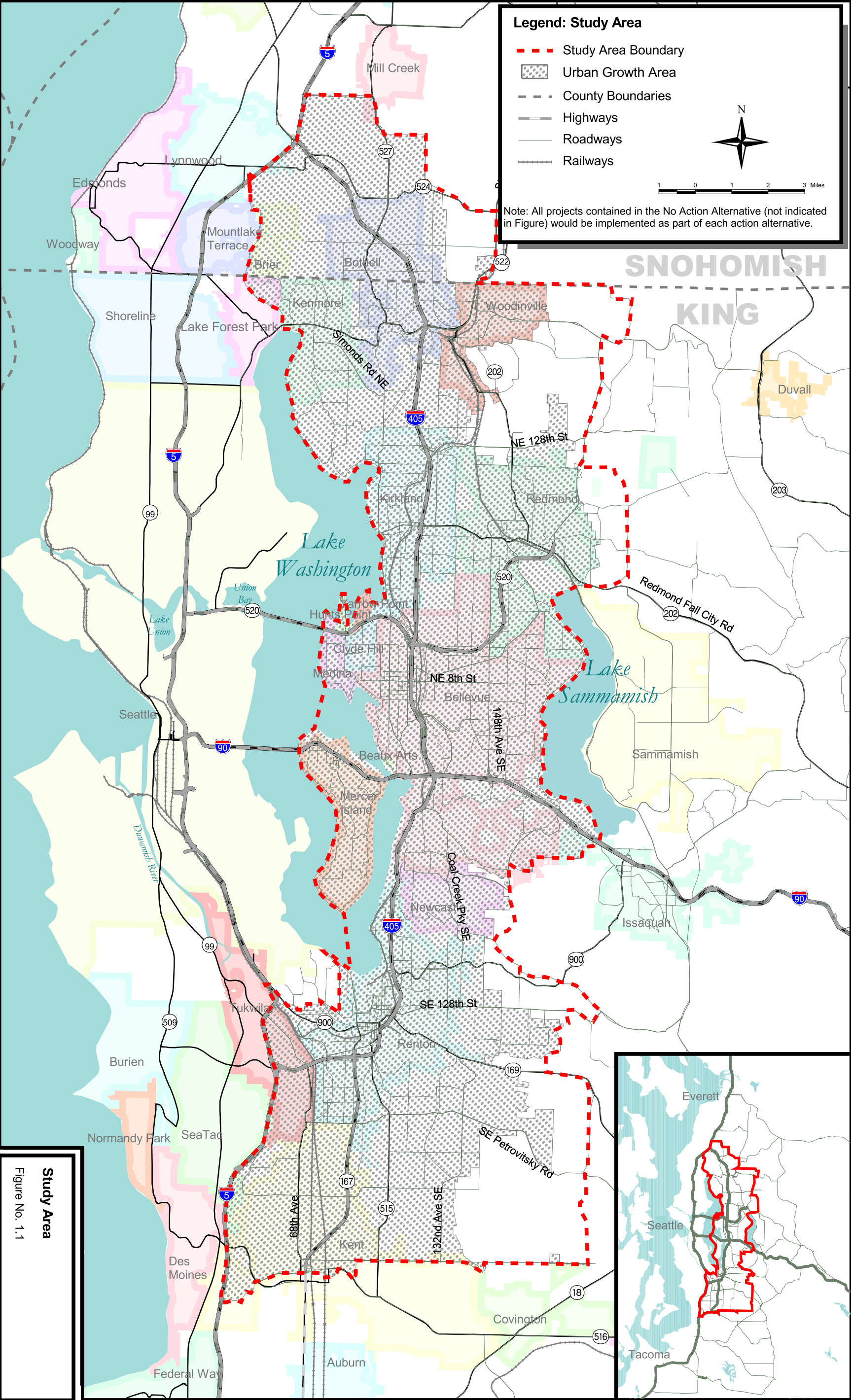
Between 1970 and 1990, communities in the I-405 corridor grew much faster than the central Puget Sound region as a whole. During the 20-year period, employment in the study area increased over 240 percent from 94,500 to 323,175 and population grew nearly 80 percent from 285,800 to 508,560.

Population and employment continued to grow during the 1990s; in particular, employment grew at an annual rate of almost 3.5 percent. Looking ahead, growth in the corridor through 2020 likely would keep pace with the robust rate of growth in the Puget Sound region. The I-405 corridor population and employment is forecast to increase by more than 35 percent. This means that by 2020 an additional 144,000 people are expected to be employed within the study area, while the population is expected to reach approximately 765,000, an increase of more than 200,000 people from 1997.

1.3.1.1 Travel Demand

Travel demand trends in the I-405 corridor match these population and employment trends: between 1995 and 2020, person trips are generally expected to increase more than 50 percent. Travel demand in terms of traffic volume is heaviest within the study area on I-405 itself, with the freeway carrying 60 to 70 percent of the total daily traffic volumes passing through the study area in the north-south direction. Conversely, the arterial streets carried 30 to 40 percent. In the east-west direction, the arterial street system plays an important role, with volumes almost equally distributed between the arterial streets and the two east-west freeways, I-90 and SR 520. In 1999, the highest volumes on I-405 occurred in the vicinity of NE 8th Street in Bellevue: about 210,000 vehicles per day. I-405 at SR 900 in Renton typified traffic volumes on I-405 south of I-90, carrying about 138,000 vehicles per day.

WSDOT's most recent traffic count data (1999) show the lowest I-405 traffic volumes, 95,000 vehicles per day, in the north end between SR 522 and I-5 at Swamp Creek, and the highest, 210,000 vehicles per day, between I-90 and SR 520. The section south of Kirkland to SR 520 carries 185,000 to 195,000 vehicles per day, and the section south of I-90 typically carries 150,000 vehicles per day. Figure 1.2 shows these findings. This variation in traffic volumes is the result of different travel demands within the corridor as well as the available capacity on the freeway.



Legend: Study Area

- Study Area Boundary
- Urban Growth Area
- County Boundaries
- Highways
- Roadways
- Railways



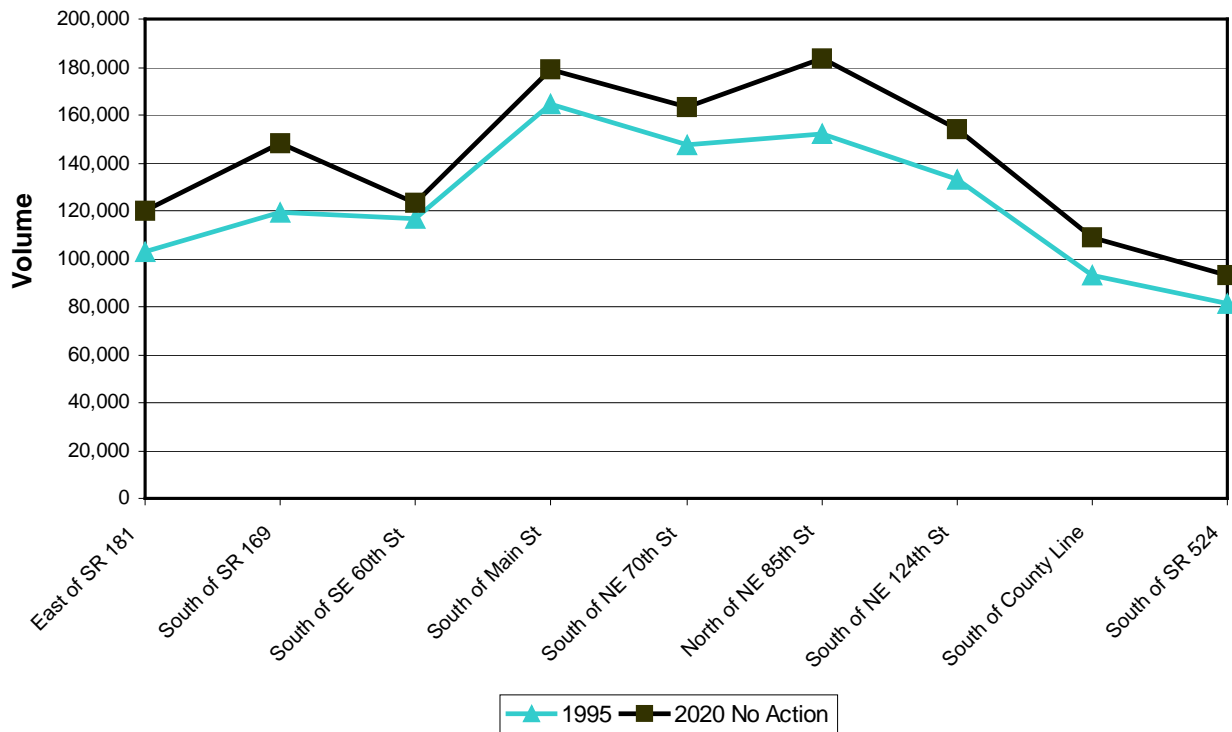
1 0 1 2 3 Miles

Note: All projects contained in the No Action Alternative (not indicated in Figure) would be implemented as part of each action alternative.

Study Area
Figure No. 1.1

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Figure 1.2: Daily Traffic Volumes at Selected Locations on I-405



1.3.1.2 Mode Split

Single-occupant vehicles (SOVs) generate the majority of traffic demand: up to 78 percent of work trips within the I-405 study area are SOVs. High-occupancy vehicles (HOVs) and transit users comprise around 20 percent of all work trips within the study area. SOV use in the study area is higher than the average for King County, while HOV and walk/bike percentages are lower. These results reflect the more suburban character of the I-405 study area.

The segment of I-405 with the highest peak-period transit ridership is between SR 520 and the Totem Lake area (2,100 riders). Transit ridership near each of the northern and southern termini of I-405 is less than 1,000 riders during peak periods. To encourage more transit demand, Sound Transit's Regional Express program is currently in the planning and early design stages of new park-and-ride lots, transit centers, and direct access ramps, including large-scale improvements to several I-405 interchanges. King County Metro and Sound Transit's evolving bus transit services concept for the I-405 study area would serve multiple activity centers, instead of the traditional Seattle/Bellevue hub-and-spoke design.

1.3.1.3 Trip Characteristics

Travel demand on I-405 appears greater for longer trips; along several sections of I-405, the average vehicle trip length exceeds 25 miles, roughly three times the study area average. Forecasts for 2020 show the freeway attracting even more long trips, with over 50 percent of all trips on I-405 exceeding 30 miles in length.

Today in the study area, only 20 percent of the total daily person-trips are home-based work trips, that is, commute trips directly to and from work. Thirty-nine percent of daily person-trips are other home-based trips (e.g., shopping, recreational, personal business) and

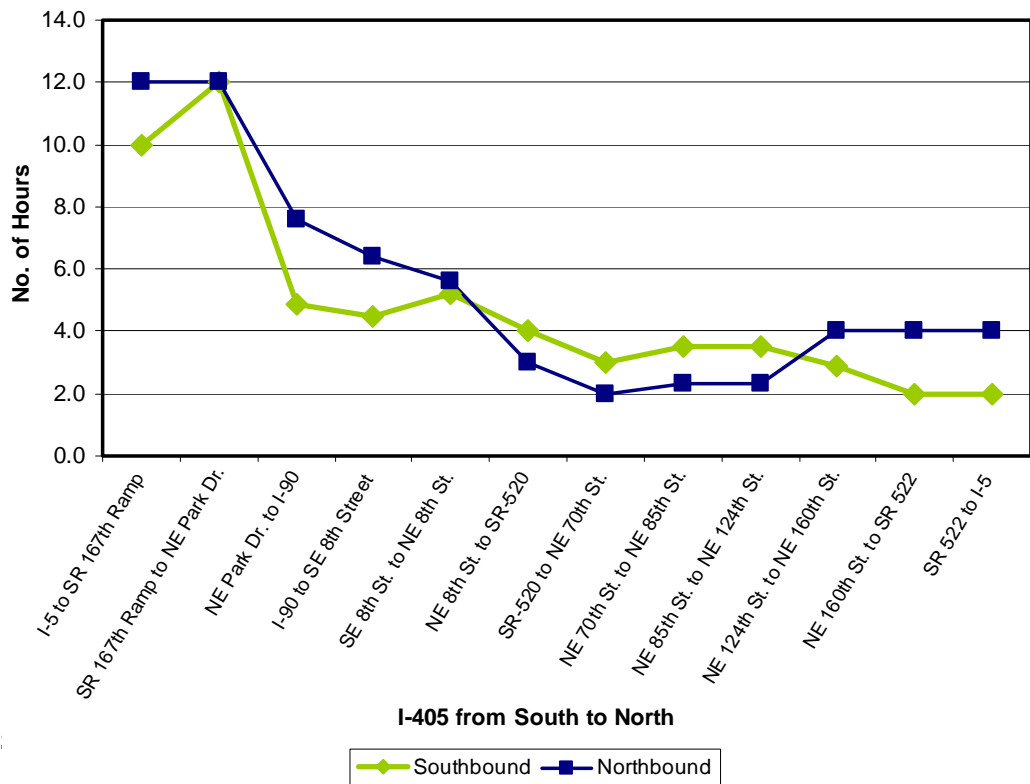
28 percent are non-home-based trips (e.g., traveling from work to daycare or shopping). School (2 percent) and commercial vehicle trips (11 percent) make up the rest. The relative shares of each trip purpose are expected to be similar in 2020. The fairly small share of trips that are purely to and from work reflects the fact that people are increasingly linking their trips, stopping on the way home to shop, pick up children, etc. (which are considered non-home based trips). This poses a challenge for transit and carpool/vanpool use.

1.3.2 Traffic Congestion and Reliability

1.3.2.1 Traffic Congestion

Heavy travel demand and frequent traffic incidents contribute to substantial traffic congestion on I-405, although they are not the only causes. Traffic congestion along I-405 is widespread during the morning and afternoon peak periods and has spread to surrounding time periods. A useful way to examine daily congestion is to look at the number of hours during which a facility is congested. For purposes of this analysis, “congestion” on the freeway is defined as travel speeds below 45 mph. Figure 1.3 illustrates the severity of traffic congestion that was present in 1997 at twelve points along I-405. The duration of traffic congestion in the northbound and southbound directions is roughly the same. The most congested area of I-405 is from I-5 in Tukwila to NE Park Drive in the city of Renton. Traffic congestion for 10-12 hours per day is typical in this section. For most other sections, traffic congestion lasts 2 to 7 hours per day.

Figure 1.3: Hours of Traffic Congestion on I-405



The average daily “volume per freeway lane” is quite consistent throughout the corridor, which demonstrates that traffic volumes alone do not cause congestion. The most likely reason for the high hours of congestion in the south end of I-405 relates to freeway “friction” caused by curves (e.g., the “S-Curves”), grades (e.g., Kenneydale Hill), and complex interchanges at I-5 and SR 167.

Traffic congestion on I-405 often results in blockage of mainline flows throughout the day by vehicles that cannot get onto the ramps at such locations as SR 167, I-90, SR 520, and SR 522. The spill-over traffic from the ramps has created substantial mainline traffic congestion and operational hazards throughout the I-405 corridor. This congestion also causes traffic to back up onto local arterials.

1.3.2.2 Travel Time

Variation in congestion causes travel times to vary widely within the I-405 study area, depending upon the origin and destination of the trip and the mode of travel being used. Table 1.1 summarizes typical P.M. peak-hour travel times (1995 data) for a variety of study area trips, averaging 23 miles in length. The times are for door-to-door travel, including in-vehicle time and access to the trip’s origin and destination. The fastest trips are typically by non-transit HOV mode, particularly for longer trips along I-405 that can take full advantage of the HOV lane system. Traveling along the full length of I-405 during the peak period can take longer than one hour for general traffic. Transit travel times are often at least twice as long as driving the equivalent distance, especially for people walking to the transit stops. Transit travel times are 10 to 15 percent faster for park-and-ride access trips compared with walk access transit trips. This is partially due to shorter wait times at park-and-ride locations created by more frequent transit service.

Table 1.1: Comparison of Typical I-405 Study Area P.M. Peak Hour Travel Times by Mode

Trip	Distance (miles)	General Traffic Travel Time (min)	HOV Travel Time (min)	Transit Travel Time Walk Access (min)	Transit Travel Time Park-and-Ride Access (min)
Bellevue Central Business District (CBD) to Federal Way/Kent	25	56	40	95	83
Renton to Mill Creek	33	65	49	125	105
Bellevue CBD to Edmonds/Lynnwood	19	42	38	85	76
Tukwila/SeaTac to Redmond/Overlake	23	49	39	116	103
Issaquah/Cougar Mt. to Bothell/Kenmore	23	46	39	108	98
Issaquah/Cougar Mt. to Federal Way/Kent	23	56	47	132	118

Source: Puget Sound Regional Council (PSRC) Model - 1995 base year

1.3.2.3 Travel Time Reliability

Not only do travel times vary by segment within the I-405 study area, they are unpredictable from day to day. The reliability of travel times can be defined in terms of deviation from a mean travel time when travelers in the same transportation mode repeat their trips with identical travel routes starting at a same time of day. A transportation system provides a good level of service when travelers experience the same travel time every time or with little deviation.

The Washington State Transportation Center (TRAC) conducted research to measure the performance of the freeway system in the Central Puget Sound area, which includes the travel time reliability measure for general traffic along I-405. The most recent analysis results are described in the report entitled *Central Puget Sound Freeway Network Usage and Performance*, 1999 Update, Volume 1 (Washington State Transportation Center and Washington State Department of Transportation). The following summarizes the findings of the travel time reliability data prepared by the TRAC for 1999.

- Existing travel time reliability for the vehicles traveling *from Tukwila to Bellevue CBD* is very poor during the mid-day and evening periods and extremely poor during the morning peak period.
- Existing travel time reliability for the vehicles traveling *from Bellevue CBD to Tukwila* is poor throughout the day (from 6:00 A.M. to 6:30 P.M.). In particular, the travel time reliability during the afternoon peak period is very poor and the traffic flows in the period are highly unstable.
- Existing travel time reliability for the trips *from Bellevue CBD to SR 522* is relatively poor during the P.M. peak period. Travelers starting trips during other periods have experienced good travel time reliability.
- Existing travel time reliability problems for the trips *from SR 522 to Bellevue CBD* are confined to the A.M. peak period. The problem is worst at 8 A.M.

Traffic incidents along the freeway corridor are major causes of the reliability problems. The State's Incident Management Program was implemented to help improve overall travel time reliability within the I-405 Corridor. Reliability of travel in the HOV lanes is considerably better than in the general purpose lanes. HOV travel times typically operate from 15-20 miles per hour faster than the adjacent general purpose lanes during congested time periods. HOV travel time reliability suffers when there is a major incident along I-405 with stop-and-go conditions. In these situations, HOV speeds drop and the level of HOV lane violations tends to increase.

1.3.3 Freight Mobility

The decreasing reliability of the regional transportation system, including I-405, is creating a serious problem for regional freight mobility. The central Puget Sound region serves as an important freight gateway to Pacific Rim countries. Automobiles, forest and agricultural products, communications and computer equipment, and hundreds of other items continuously move over the region's roadways and railroads, to seaports and airports. Substantial delay as a result of transportation system congestion is costing the region's businesses nearly \$700 million a year, according to information from WSDOT. The cost to the freight industry itself is estimated to be around \$200 million per year.

Products shipped by truck across I-90 from Eastern Washington reach points north and south of Seattle via I-405. At the same time, I-405 serves as a heavily used transport corridor for local freight delivery to and from the cities along the corridor. Smaller trucks, such as delivery vans, account for many freight trips within the region, and these trips could benefit greatly from roadway improvements to I-405.

Interstate 405 continues to be used by freight carriers as an alternative to the preferred I-5 route when severe congestion occurs on I-5 in downtown Seattle near the Convention Center (one of the most substantial freight mobility bottlenecks in the region). I-405 also provides ready access to the distribution centers along SR 167 in the Kent Valley. Volumes of heavy trucks on the portion of I-405 south of I-90 are about double those along the

northern portion due to truck movements to and from the Kent Valley. Truckers identify congestion at the SR 167/I-405 interchange as one of the worst transportation system problems in the region, and the trucking community supports improvements to this major truck corridor interchange as one of its top priorities.

The latest data indicate that the central Puget Sound region's roadways carry approximately 1.2 million truck trips each day, with about 70 percent of those trips occurring within King County. I-405 carries a substantial portion of those trips, moving up to 90 percent of the total truck origins and destinations in east King County. Truck volumes along I-405 are expected to grow by 50 percent by the year 2010. Reductions in system reliability and resulting higher transportation costs increase the cost of manufacturing and distributing goods, while adversely affecting economic vitality and job creation. Accessibility to markets becomes increasingly difficult with worsening traffic congestion and delay. Improvements to the I-405 corridor could provide tangible economic benefits for all of Washington State.

1.3.4 Safety

Twenty-nine of the 280 high accident locations in King and Snohomish counties are located along I-405. Most high accident locations are associated with ramps connecting to I-405, including those at SR 181 (Interurban), SR 169, SR 900 (Sunset and Park), Coal Creek Parkway, SE 8th Street, NE 4th Street, NE 8th Street, SR 908 (NE 85th Street), NE 116th Street, NE 160th Street, and SR 527. The portion of I-405 north of SR 527 is identified as a high accident corridor due to the relatively higher speeds and more serious injuries associated with these accidents.

Over the three-year period from 1994 to 1996, a total of 5,580 accidents was reported along I-405. Most collisions occurred on the mainline freeway, with about one-fourth of all accidents occurring on the ramps, collector-distributor roads, and cross streets at the interchanges. About half of all collisions involve property damage only, while half involve injuries or fatalities. This injury pattern applies equally to the mainline and ramp segments; however, all seven fatalities reported in this period occurred on the I-405 mainline.

The overall accident rate along I-405 (1.6 accidents per million vehicle miles) is about midrange compared to other freeways in King County. The rates are lower than the average rate for all state highways (1.88 accidents per million vehicle miles, or MVM) and for state highways in King County (2.27 accidents per MVM). On comparable local freeways, I-5 and SR 520 both exhibit accident rates of about 2.0 accidents per MVM. WSDOT's ramp metering program on I-405 has been very successful. Rear-end and sideswipe accidents have decreased by 60 percent to 70 percent near locations with ramp meters.

For state roads serving as surface arterial routes, accident rates typically fall into the range of three to five accidents per MVM. This rate is related to the presence of traffic signals, driveways, pedestrians, and bicyclists, and lower levels of access control. These accident rates are typical of urban arterial facilities. Accident rates for selected arterial and collector routes in the primary study area generally range between two and four accidents per MVM, with some streets higher. These streets also experience higher accident rates due to the presence of signalized intersections, driveways, and other conflicts.

■

1.4 Purpose of the Proposed Action

The purpose of the proposed action is:

To provide an efficient, integrated, and multi-modal system of transportation solutions within the corridor that meets the need in a manner that:

- Provides for maintenance or enhancement of livability for communities within the corridor;
- Provides for maintenance or improvement of air quality, protection or enhancement of fish-bearing streams, and regional environmental values such as continued integrity of the natural environment;
- Supports a vigorous state and regional economy by responding to existing and future travel needs; and
- Accommodates planned regional growth.

■

1.5 Study Area

The study area for the I-405 Corridor Program defines the general boundaries of the I-405 corridor and encompasses the essential improvements proposed within each alternative. It encompasses an area of approximately 250 square miles that extends on both sides of I-405 between its southern intersection with I-5 in the city of Tukwila and its northern intersection with I-5 in Snohomish County. This area includes the cities of Tukwila, Renton, Newcastle, Bellevue, Redmond, Kirkland, Woodinville, and Bothell, as well as portions of the cities of Issaquah, Kenmore, Kent, Lynnwood, and Mercer Island and adjacent unincorporated areas of King and Snohomish counties.

For purposes of environmental analysis, documentation, and review, potential substantial adverse effects are identified and evaluated wherever they are reasonably likely to occur in the region.

2. DESCRIPTION OF ALTERNATIVES

Four programmatic action alternatives and a No Action Alternative are evaluated in this Environmental Impact Statement (EIS). Each of the four action alternatives is a combination of multi-modal transportation improvements and other mobility solutions packaged to work together as a system. Each package demonstrates a unique emphasis in response to the purpose and need for the I-405 Corridor Program. The improvements and mobility solutions that comprise each action alternative are assembled from the following major elements:

- Transportation demand management (TDM)
- Regional transportation pricing
- Local transit service (bus and other technologies)
- Bus rapid transit (BRT) operating in improved-access high-occupancy vehicle lanes on I-405, I-90, and SR 520
- Fixed-guideway high-capacity transit (HCT) operating with physical separation from other transportation modes
- Arterial high-occupancy vehicle (HOV) and bus transit priority improvements
- HOV express lanes on I-405 and HOV direct access ramps
- Park-and-ride capacity expansions
- Transit center capacity improvements
- Basic I-405 safety and operational improvements
- I-405 general purpose lanes
- I-405 collector-distributor lanes
- I-405 express lanes
- SR 167 general purpose lanes
- Capacity improvements on freeways connecting to I-405
- Planned arterial improvements
- Capacity improvements on north-south arterials
- Arterial connections to I-405
- Pedestrian and bicycle improvements
- Intelligent transportation system (ITS) improvements
- Truck freight traffic enhancements

These elements are described in greater detail in Appendix A (*I-405 Corridor Program - Major Elements of Alternatives*). Table 2.1 shows the system elements contained in each of the alternatives.

Table 2.1: System Elements Contained in Each Alternative

	<u>No Action Alternative</u>	<u>Alternative 1</u> HCT/TDM Emphasis	<u>Alternative 2</u> Mixed Mode with HCT/Transit Emphasis	<u>Alternative 3</u> Mixed Mode Emphasis	<u>Alternative 4</u> General Capacity Emphasis
Committed and funded freeway projects	X	X	X	X	X
Committed and funded HOV projects	X	X	X	X	X
Committed and funded arterial projects	X	X	X	X	X
Park-and-ride expansions included in No Action	X	X	X	X	X
Transit center improvements included in No Action	X	X	X	X	X
Transportation Demand Management (TDM)	X	X	X	X	X
Expanded TDM regional congestion pricing strategies		X			
Expand transit service by 100% compared to K. Co. 6-year plan		X	X	X	
Expand transit service by 50% compared to K. Co. 6-year plan					X
Physically separated, fixed-guideway HCT system		X	X		
Bus rapid transit operating in improved access HOV lanes				X	
Arterial HOV priority for transit		X	X	X	
HOV direct access ramps on I-405			X	X	X
Additional park-and-ride capacity expansion		X	X	X	
Additional transit center improvements		X	X	X	
Basic I-405 safety and operational improvements		X	X	X	X
I-405/ SR 167 interchange ramps for all major movements			X	X	X
One added general purpose lane in each direction on I-405			X		X
Two added general purpose lanes in each direction on I-405				X	

Table 2.1: (continued) System Elements Contained in Each Alternative

	<u>No Action Alternative</u>	<u>Alternative 1</u> HCT/TDM Emphasis	<u>Alternative 2</u> Mixed Mode with HCT/Transit Emphasis	<u>Alternative 3</u> Mixed Mode Emphasis	<u>Alternative 4</u> General Capacity Emphasis
Two express lanes added in each direction on I-405 ^a					X
Widen SR 167 by one lane each direction to study area boundary			X	X	X
Improved capacity of freeways connecting to I-405			X	X	X
Planned arterial improvements			X	X	X
Complete missing segments of major arterial connecting routes ^b				X	
Expand capacity on north-south arterials ^b					X
Upgrade arterial connections to I-405 ^b			X	X	X
Pedestrian / bicycle connections and crossings of I-405		X	X	X	X
Intelligent transportation system (ITS) improvements		X	X	X	X
Truck freight traffic enhancements		X	X	X	

^a To be studied as general purpose lanes and as managed high-occupancy/toll (HOT) lanes.

^b With jurisdictional approval.

2.1 No Action Alternative

The No Action Alternative includes the funded highway and transit capital improvement projects of cities, counties, Sound Transit, and WSDOT. These projects are already in the pipeline for implementation within the next six years, and are assumed to occur regardless of the outcome of the I-405 Corridor Program. For this reason, they are referred to collectively as the No Action Alternative.

Under the No Action Alternative, only limited expansion of state highways would occur. No expansion of I-405 is included; however, a new southbound I-405 to southbound SR 167 ramp modification would be constructed. Approximately 15 arterial widening and interchange improvement projects would be implemented within the study area by local agencies. Short-term minor construction necessary for continued operation of the existing transportation facilities would be accomplished, and minor safety improvements would be constructed as required.

It is assumed that Phase I of Sound Transit's regional transit plan would be completed. Approximately 36 HOV direct access projects, arterial HOV improvements, park-and-ride expansions, and transit center enhancements would be implemented in the study area as part of the No Action Alternative. Bus transit service levels by the 2020 horizon year are based upon the Puget Sound Regional Council (PSRC) Metropolitan Transportation Plan. A 20 percent increase in bus transit service hours above the current King County 6-year plan level is assumed by year 2020. Parking costs are expected to increase due to market forces. Additional urban centers and major employment centers within the study area are also assumed to implement parking charges by 2020.

These baseline transportation improvement projects are, or will be, the subject of separate and independent project-specific environmental analysis, documentation, and review. Their direct impacts are not specifically evaluated by the I-405 Corridor Program. However, the secondary and cumulative impacts of these projects are, addressed as part of the analyses contained herein.

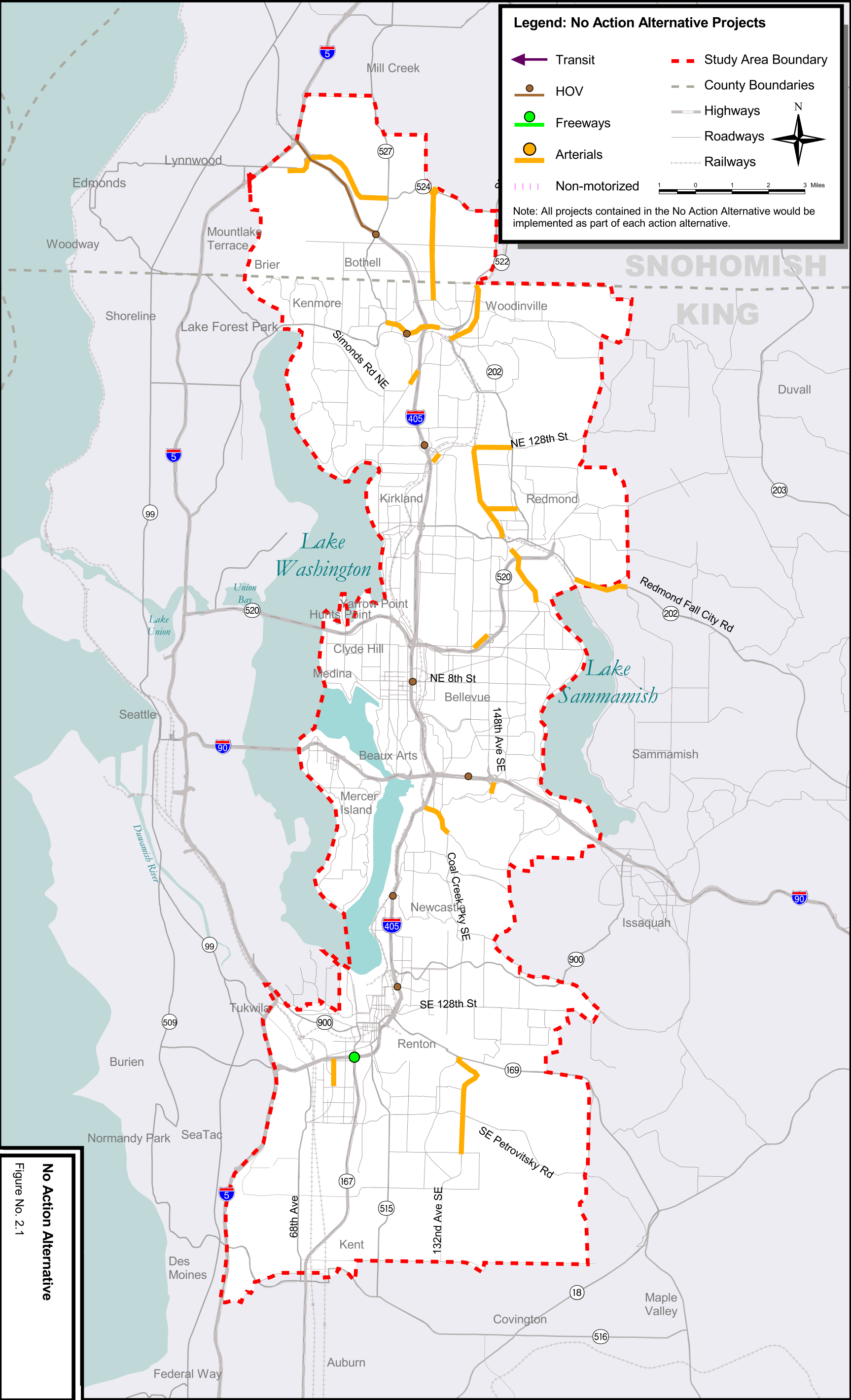
Figure 2.1 shows the locations of the improvements contained in the No Action Alternative. Appendix B (I-405 Corridor Program EIS Alternatives Project Matrix) identifies the specific transportation improvements and mobility solutions contained within each system element and alternative.



2.2 Alternative 1: High-Capacity Transit/TDM Emphasis

This alternative attempts to minimize addition of new impervious surface from general purpose transportation improvements and to encourage transit use within the study area. To do this, Alternative 1 emphasizes reliance on a new physically separated fixed-guideway HCT system, substantial expansion of local bus transit service, non-construction mobility solutions such as regional transportation pricing, and transportation demand management (TDM) strategies. It does not include any increase in roadway capacity beyond the No Action Alternative. All improvements contained in the No Action Alternative are included in Alternative 1, as well as in the other action alternatives. Table 2.1 shows the system elements contained in each of the alternatives.

Alternative 1 includes a physically separated, fixed-guideway HCT system, potentially using some form of rail technology and potentially operating within portions of the existing Burlington Northern Santa Fe (BNSF) right-of-way. The HCT system would serve the major activity centers within the study area, and would include connections to Redmond and Issaquah and west across Lake Washington to Seattle. The connection across Lake Washington is being evaluated as part of the ongoing Trans-Lake Washington Project EIS. Bus transit service would be doubled compared to the current King County 6-year plan. (The effects of recent transit reductions on short-term transit service have not been assumed.) Arterial HOV priority for transit, additional park-and-ride capacity, and additional transit center improvements also would be provided.



Legend: No Action Alternative Projects

- Transit
- HOV
- Freeways
- Arterials
- Non-motorized
- Study Area Boundary
- County Boundaries
- Highways
- Roadways
- Railways

Note: All projects contained in the No Action Alternative would be implemented as part of each action alternative.

No Action Alternative
Figure No. 2.1

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A package of basic improvements to I-405 would be implemented, including climbing lanes, auxiliary lanes, I-90/Coal Creek interchange improvements, and I-405/SR 167 interchange improvements, among others. No additional general purpose lanes on I-405 would be provided.

Limited arterial HOV/transit improvements would be provided to facilitate access to I-405 and the fixed-guideway HCT system, along with non-construction treatments such as providing priority for transit at signals and intersections. Regional pricing strategies similar to those currently being studied by the Puget Sound Regional Council (PSRC) would be implemented along with a package of core TDM strategies that are common to all the action alternatives.

Figure 2.2 shows the location of improvements contained in Alternative 1. Appendix A (*I-405 Corridor Program - Major Elements of Alternatives*) describes the system elements that are the building blocks for the alternatives. Appendix B (I-405 Corridor Program EIS Alternatives Project Matrix) identifies the specific transportation improvements and mobility solutions contained within each system element and alternative.

■

2.3 Alternative 2: Mixed Mode with High-Capacity Transit/Transit Emphasis

This alternative attempts to improve mobility options in the study area relative to Alternative 1 by providing the same substantial commitment to transit, combined with the minimum increase in roadway capacity for HOV and general purpose traffic. To do this, Alternative 2 would implement a new physically separated, fixed-guideway HCT system, substantial expansion of local bus transit service, one added lane in each direction on I-405, and improvements to connecting arterials. All improvements contained in the No Action Alternative are included in Alternative 2, as well as in the other action alternatives. Table 2.1 shows the system elements contained in each of the alternatives.

Alternative 2 includes a physically separated, fixed-guideway HCT system, potentially using some form of rail technology. The HCT system would serve the major activity centers within the study area, and would include connections to Redmond and Issaquah and west across Lake Washington to Seattle. The connection across Lake Washington is being evaluated as part of the ongoing Trans-Lake Washington Project EIS. Bus transit service would be doubled compared to the current King County 6-year plan. Arterial HOV priority for transit, additional park-and-ride capacity, and additional transit center improvements are included, as well as completion of the HOV freeway-to-freeway ramps along I-405.

To increase general purpose capacity, I-405 would be widened by one lane in each direction. One lane also would be added in each direction on SR 167 to the study area boundary. The package of basic improvements to I-405 would be implemented, along with the core TDM strategies that are common to all action alternatives. New capacity improvements on connecting arterials and freeways would be provided along with planned arterial improvements of local jurisdictions.

Figure 2.3 shows the location of improvements contained in Alternative 2. Appendix A (*I-405 Corridor Program - Major Elements of Alternatives*) describes the system elements for the alternatives. Appendix B (I-405 Corridor Program EIS Alternatives Project Matrix) identifies the specific transportation improvements and mobility solutions contained within each system element and alternative.

2.4 Alternative 3: Mixed Mode Emphasis

This alternative attempts to substantially improve mobility options for all travel modes and to provide a HCT system throughout the study area at a lower cost than the physically separated, fixed-guideway system proposed in Alternatives 1 and 2. To do this, Alternative 3 would implement a new bus rapid transit (BRT) system, substantial expansion of local bus transit service, two added lanes in each direction on I-405, and improvements to arterials within the study area. All improvements contained in the No Action Alternative are included in Alternative 3, as well as in the other action alternatives. Table 2.1 shows the system elements contained in each of the alternatives.

Alternative 3 includes a BRT system operating in improved-access HOV lanes on I-405, I-90, and SR 520. The BRT system would serve the major activity centers within the study area, and would include connections to Redmond and Issaquah and west across Lake Washington to Seattle. The connection across Lake Washington is being evaluated as part of the ongoing Trans-Lake Washington Project EIS. Bus transit service would be doubled compared to the current King County 6-year plan. Improved arterial HOV priority for transit, park-and-ride capacity, transit center improvements, and HOV direct access are included, as well as completion of the HOV freeway-to-freeway ramps along I-405.

This alternative would substantially increase capacity for general purpose traffic on I-405 by adding two lanes in each direction and improving major interchanges. These added general purpose lanes replace most of the auxiliary and climbing lanes contained in the package of basic improvements to I-405 that are common to the other action alternatives. One lane would be added in each direction on SR 167 to the study area boundary. The core TDM strategies would be implemented. New capacity improvements on connecting arterials and freeways would be provided. Selected arterial missing links would be completed together with planned arterial improvements of local jurisdictions.

Figure 2.4 shows the location of improvements contained in Alternative 3. Appendix A (I-405 Corridor Program - Major Elements of Alternatives) describes the system elements for the alternatives. Appendix B (I-405 Corridor Program EIS Alternatives Project Matrix) identifies the specific transportation improvements and mobility solutions contained within each system element and alternative.

2.5 Alternative 4: General Capacity Emphasis

This alternative places the greatest emphasis on increasing general purpose and HOV roadway capacity, with substantially less reliance on new transit facilities or added local bus service than any of the other action alternatives. To do this, Alternative 4 would provide one additional lane in each direction on I-405, a new four-lane I-405 express roadway, and the other general purpose and HOV roadway improvements on I-405 and connecting freeways contained in Alternative 3. The expansion of local bus transit service would be about half that proposed under the other action alternatives. All improvements contained in the No Action Alternative are included in Alternative 4, as well as in the other action alternatives. Table 2.1 shows the system elements contained in each of the alternatives.

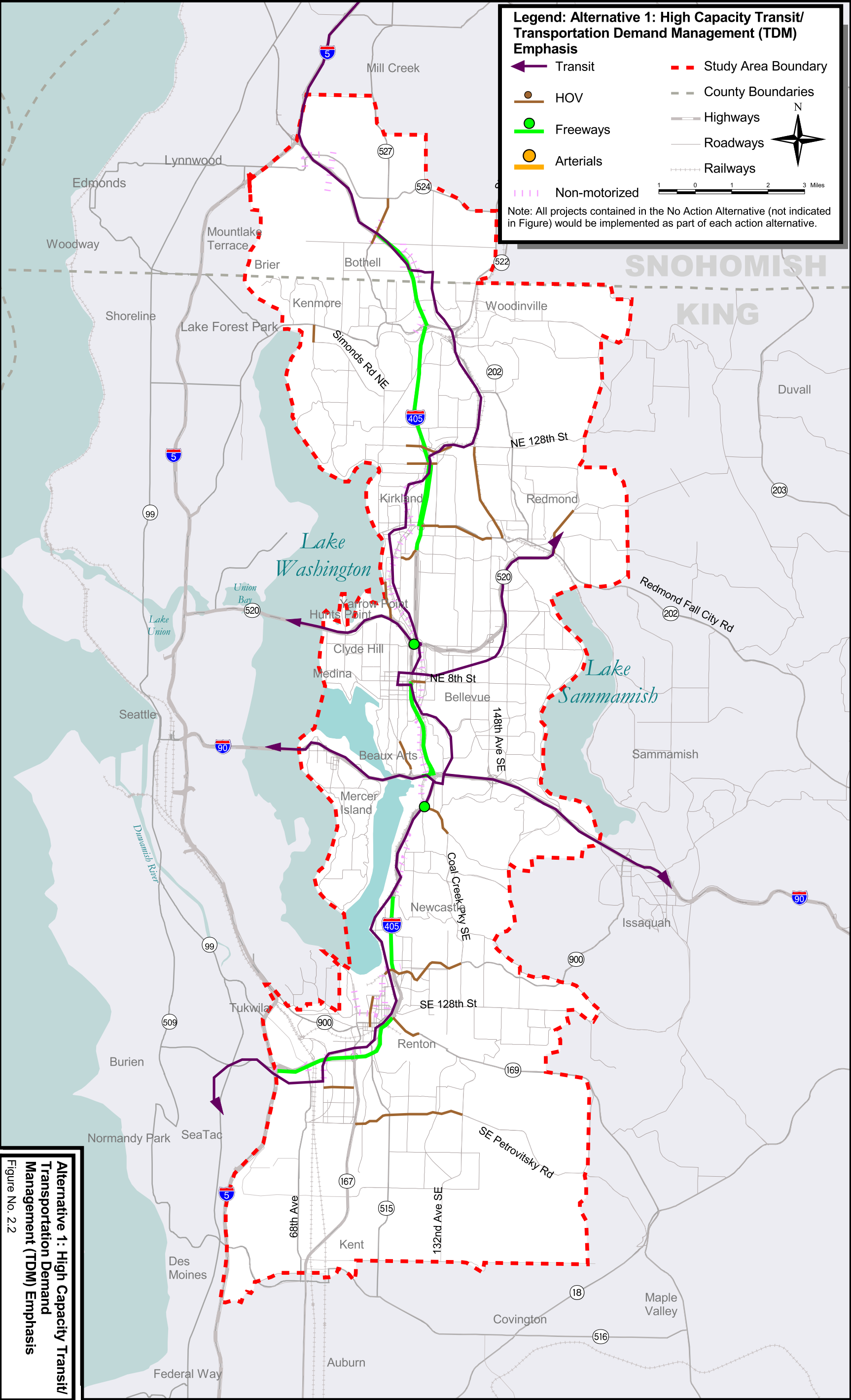
Alternative 4 would expand freeway capacity by adding one additional general purpose lane in each direction on I-405 in most segments, improving major interchanges, and constructing a new four-lane I-405 express roadway consisting of two lanes in each direction with limited

access points. Completion of the HOV freeway-to-freeway ramps along I-405 and the package of basic improvements to I-405 would be implemented.

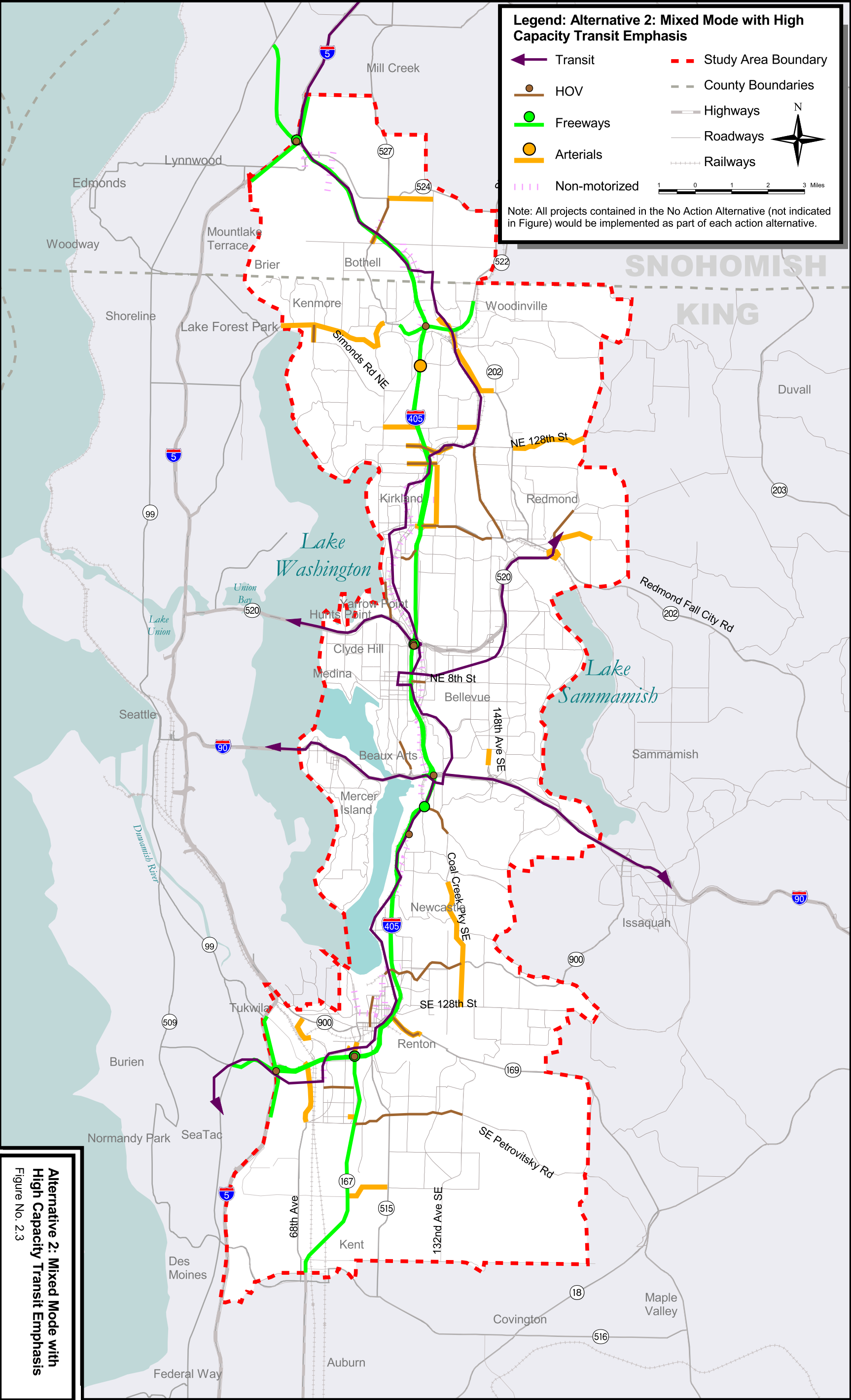
Arterial improvements would include additional expansion of major arterial routes and connections to I-405 in conjunction with the planned arterial improvements of local jurisdictions. Transit in this alternative is assumed to be a continuation of the existing local and express bus transit system with a 50 percent increase in service compared to the current King County 6-year plan. Park-and-ride capacity would be provided along with the core TDM strategies that are common to all action alternatives.

Figure 2.5 shows the location of improvements contained in Alternative 4. Appendix A (I-405 Corridor Program - Major Elements of Alternatives) describes the system elements for the alternatives. Appendix B (I-405 Corridor Program EIS Alternatives Project Matrix) identifies the specific transportation improvements and mobility solutions contained within each system element and alternative.

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Legend: Alternative 2: Mixed Mode with High Capacity Transit Emphasis

← Transit	--- Study Area Boundary
HOV	--- County Boundaries
Freeways	Highways
Arterials	Roadways
Non-motorized	Railways

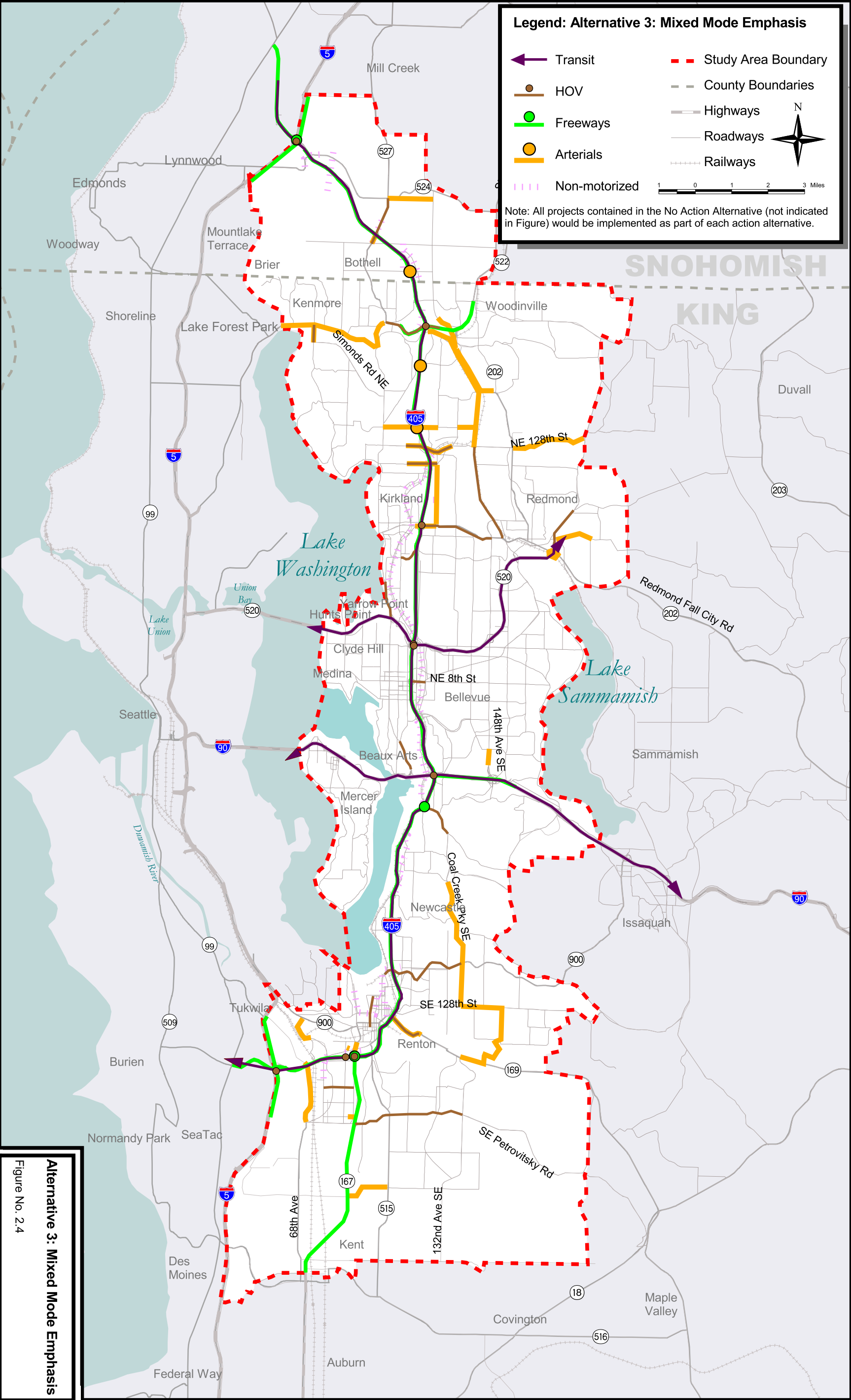
Note: All projects contained in the No Action Alternative (not indicated in Figure) would be implemented as part of each action alternative.

1 0 1 2 3 Miles

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Alternative 2: Mixed Mode with High Capacity Transit Emphasis
Figure No. 2.3

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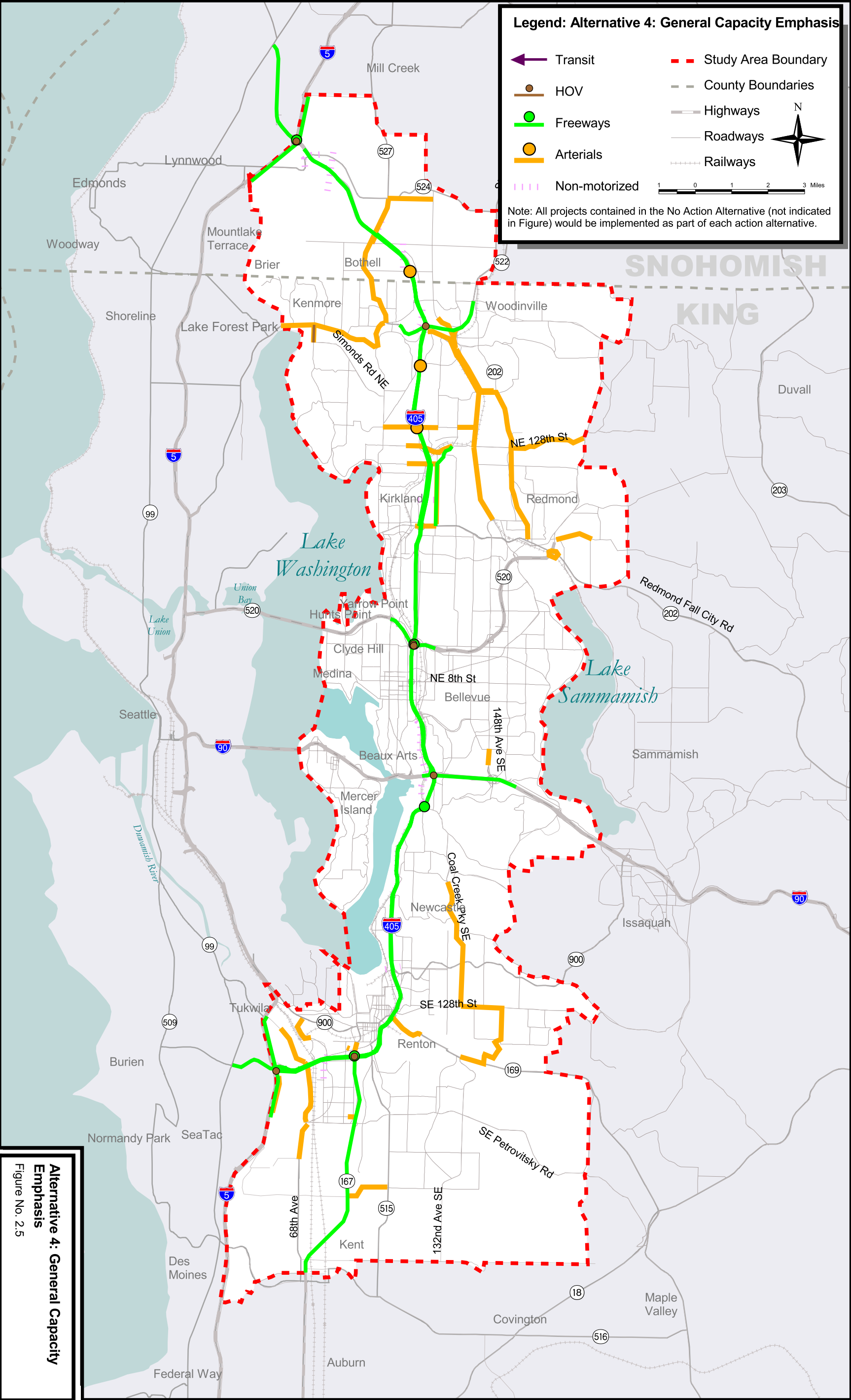
Legend: Alternative 3: Mixed Mode Emphasis

← Transit	--- Study Area Boundary
HOV	--- County Boundaries
Freeways	Highways
Arterials	Roadways
Non-motorized	Railways

Note: All projects contained in the No Action Alternative (not indicated in Figure) would be implemented as part of each action alternative.

Alternative 3: Mixed Mode Emphasis
Figure No. 2.4

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3. METHODOLOGY AND COORDINATION

3.1 Evaluation Criteria

Floodplains are lowlands that are relatively flat and are subject to flooding in any given year. The 100-year floodplain is defined as the area adjacent to a stream or lake that is subjected to inundation by waters having a flood probability in exceedence of one percent in any given year, as determined by standard statistical and hydrologic methods. The 100-year flood is a statistical concept to describe, over the long term, how frequently a "100-year" size flood event occurs; in the short term, a 100-year flood may occur more frequently.

Floodplains are divided into three parts: the Federal Emergency Management Agency (FEMA) floodway, the zero-rise floodway, and the flood fringe. The FEMA floodway is the channel of a river or other watercourse and the adjacent land areas that must be unconfined or unobstructed either vertically or horizontally to provide for the discharge of the base-year flood. The zero-rise floodway is that portion of the floodplain outside the floodway that is inundated by floodwaters and in which encroachment is permissible as long as it doesn't change the flood storage volume or flood elevation. The flood fringe is that portion of the floodplain that tends to collect standing water rather than rapidly flowing water. Development in the FEMA floodway is to be avoided, and structures in the remainder of the floodplain and the flood fringe should be avoided or minimized. In cases where the FEMA floodway is relatively narrow, it can be spanned by a bridge to avoid impacts.

Counties and cities in the region bear the primary responsibility for the regulation of activities in floodplains. Comprehensive plans seek to reduce the number of people exposed to flood hazards by designating major river floodplains primarily for low-density agricultural and other compatible uses. The intent of this approach is to protect public safety and reduce long-term public costs and damage to the environment. The 100-year floodplain is designated as a flood hazard area in sensitive area ordinances.

3.2 Approach to Analyses

FEMA flood insurance rate maps for King and Snohomish counties were used to identify 100-year floodplains on the major rivers, lakes, and streams for the study area. Much of this information is in the King County GIS database and was available to plot as an overlay on maps of each of the alternatives. Because revisions to some of the FEMA maps have been made since the King County database was developed, maps that were revised since 1995 were inspected to see if changes in the 100-year floodplain had been made in the study area. Locations where proposed transportation improvements and the 100-year floodplains intersected were then evaluated using conceptual plans and USGS 7.5-minute topographic maps so that the potential impacts could be estimated in terms of linear feet of floodplain.

In this evaluation, floodway refers to the designated FEMA floodway, and floodplain is the remainder of the mapped floodplain that is assumed to be equal to the zero-rise floodway. In King County, flood fringe impacts are inside the mapped floodplain and difficult to estimate accurately without a survey and plans, so these specific impacts have not been quantified.

Floodplains for minor streams, wetlands, and closed depressions are not mapped, but according to King County code, they should be determined on an individual project basis. Impacts to these minor floodplains are not included in this study.

In addition to review of the FEMA maps, individual jurisdictions' sensitive areas ordinances were examined in order to gain an understanding of the local controls in effect for floodplain management.

It is expected that all projects would avoid floodway areas. Any projects passing through a floodplain would meet each of the local jurisdiction and FEMA requirements for locating in the floodplain, such as no obstruction in the floodway that would raise the flow height above the zero rise of the flood elevation.

The park-and-ride and transit center alternatives were not evaluated since sites have not been selected. It is assumed that these projects would be developed in full conformance with local floodplain and sensitive areas ordinances.



3.3 Coordination with Agencies and Jurisdictions

In addition to review of the FEMA maps, individual jurisdictions sensitive areas ordinances were examined in order to gain an understanding of the local controls in effect for floodplain management.



3.4 Plans, Policies, and Approvals

The National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973 were the primary catalysts for restricting development within floodplains. Under the Disaster Protection Act, the federal government conditioned the availability of flood damage insurance on the enactment of local controls over development in floodplains. Local controls must meet the minimum requirements set by the federal government. Floodplain policies require that development result in no reduction of the effective flood storage volume of the floodplain. Within the floodway, no development is allowed that would increase the flood elevation rise in the floodway.

Counties and cities in the region bear the primary responsibility for the regulation of activities in floodplains. For example, a local government may have a specific program for floodplain management or may include floodplain restrictions in its zoning and/or building codes as well as sensitive area ordinances.

Comprehensive plans also seek to reduce the number of people exposed to flood hazards by designating major river floodplains primarily for low density agricultural and other compatible uses. The intent of this approach is to protect public safety and reduce long-term public costs and damage to the environment. The 100-year floodplain is designated as a flood hazard area in sensitive area ordinances.



3.5 Assumptions

It is assumed that all projects would avoid floodway areas. Any projects passing through a floodplain would meet each of the local jurisdiction and FEMA requirements for locating in the floodplain, such as no obstruction in the floodway that will raise the flow height above the zero rise of the flood elevation.

The park-and-ride and transit center alternatives were not evaluated since sites have not been selected. It is assumed that these projects will be developed in full conformance with local floodplain and sensitive areas ordinances. The non-project alternatives were not studied either, however they are included in the total number of projects.

4. AFFECTED ENVIRONMENT

4.1 100-year Floodplains

Floodplains are important features within the study area (see Figure 4.1). In the Snohomish County portion of the study area, Swamp Creek, Bear Creek, and North Creek each have 100-year floodplains that are crossed by roadways. In the northern part of the study area in King County, North Creek, Swamp Creek, Bear Creek, Little Bear Creek, Evans Creek, the Sammamish River, Kelsey Creek, Mercer Slough, Tibbetts Creek and Richards Creek, all have 100-year floodplains that are near major roadways or are crossed by bridges. In the southern portion of the study area, Big Soos Creek, May Creek, Tibbetts Creek, Springbrook Creek, the Green River, the Duwamish River, and the Cedar River have 100-year floodplains that are near roadways or are crossed by bridges. Over the years, as information about the location and importance of floodplains has increased, roads have been designed to avoid the floodway and ensure a zero-rise of the flood elevation. Table 2 lists the floodplains that are currently crossed or are adjacent to highways and/or arterials in the study area.

Table 4.1: Floodplains Presently Crossed or Adjacent to I-405 and Arterials in the Study Area

Floodplain	Roadway
Swamp Creek	Crossed by NE Bothell Way
North Creek	Crossed by I-405, SR 522, NE 195 th Street, and Bothell Everett Highway (SR 527)
Sammamish River	Crossed by I-405 and SR 520 Adjacent to NE Bothell Way and SR 522 Crossed by NE 175 th Street and NE 145 th Street (SR 202)
Bear Creek and Little Bear Creek	Adjacent to and crossed by Avondale Road Adjacent to and crossed by Redmond – Fall City Road Adjacent to SR 520
Evans Creek	Adjacent to and crossed by Redmond – Fall City Road
Kelsey Creek	Crossed by Lake Hills Connector, NE 8 th Street, 148 th Avenue NE Adjacent to SE 8 th Street and Bellevue-Redmond Road
Mercer Creek	Crossed by I-90 and I-405 Adjacent to Bellevue Way SE and SE 8 th Street
Richards Creek	Crossed by I-90 Adjacent to Richards Road
Coal Creek	Crossed by I-405 Adjacent to and crossed by Coal Creek Parkway
May Creek	Crossed by I-405 Crossed by Lake Washington Boulevard N, Coal Creek Parkway, and SR 900
Tibbetts Creek	Adjacent to and crossed by I-90
Green River	Crossed by I-405 and SR 516 Crossed by Southcenter Blvd. , Interurban Avenue, and S 180 th Street Adjacent to West Valley Highway
Cedar River	Crossed by I-405 Crossed by Logan Avenue and Bronson Way Adjacent to and crossed by Maple Valley Road
Rolling Hills Creek	Adjacent to Interchange of I-405 and SR 167
Springbrook Creek	Crossed by I-405 Crossed by Grady Way and SW 43 rd Street Adjacent to and crossed by SR 167
Mill Creek	Crossed by SR 167
Unnamed Flood Area	Adjacent to I-405 east of I-5
Duwamish River	Crossed by I-5 Adjacent to Interurban Avenue

4.2 Attributes and Functions of a Floodplain

Floodplains have many important features. The primary feature is that they carry peak flows of the river or creek. Floodplains allow the river to increase in width to carry the peak flow, reducing the velocity and resulting in less erosion. They also provide an area for deposition and renewal of sediment during flood events. Commonly, wetlands develop in the floodplains due to the silty soils and lack of drainage back to the river or creek. Floodplains are frequently riparian zones with large trees which provide shade and habitat. Even if the floodplain is grassland or pasture, it provides habitat for birds and small mammals. See the following I-405 Corridor Program Draft Expertise Reports which provide more information on the ecological functions provided by floodplains:

- Wetlands (DEA, 2001),
- Upland Vegetation, Habitat, and Wildlife (DEA, 2001),
- Fish and Aquatic Habitat (DEA, 2001).

4.3 Existing Conditions of the Floodplains

The major rivers in the study area have been channelized as development has occurred in the floodplains. These rivers typically have levees along both banks and limited amounts of existing flood plains in the project area. The exception is the Sammamish River, which still has a large undeveloped floodplain in the project area. All roadways cross these major rivers on bridges with few or no piers in the floodway. These major rivers include Duwamish River, Green River, Cedar River, and Sammamish River.

Some of the creeks have been channelized, but they do not have the extent of levees as the major rivers. Most of the large floodplains in the project area are due to these creeks. Major roadways such as I-405 typically have bridge crossings of major creeks; however there are some large culverts. Arterial roadways have both bridge and culvert crossings. These creeks include Springbrook Creek, Mercer Creek, North Creek, and Bear Creek.

Some of the creeks are still fairly natural channels with little channelization or levees. These creeks have larger floodplains where the ground is level and little floodplain when the creek is in a ravine. Most roadway crossings are currently in culverts, though some such as I-405 and Lake Washington Blvd. over May Creek are bridges. These creeks include Rolling Hills Creek, May Creek, Coal Creek, Kelsey Creek, Evans Creek, and Swamp Creek.

4.4 Types of Floodplain Impacts

If a river or creek is crossed by a bridge or a culvert, the floodway may be reduced. In a narrower floodway, the meandering zone could be lost and water velocities could increase, creating additional scour and erosion.

A potential impact to floodplains is the permanent loss of flood storage caused by the road fill, additional pavement, and storm drainage treatment areas. In addition, there may be a loss of ecological functions related to wetlands, vegetation, and wildlife. These are both types of potential permanent loss associated with new development. There also may be temporary losses in the construction area, primarily losses of ecological functions due to soil compaction and lost vegetation.

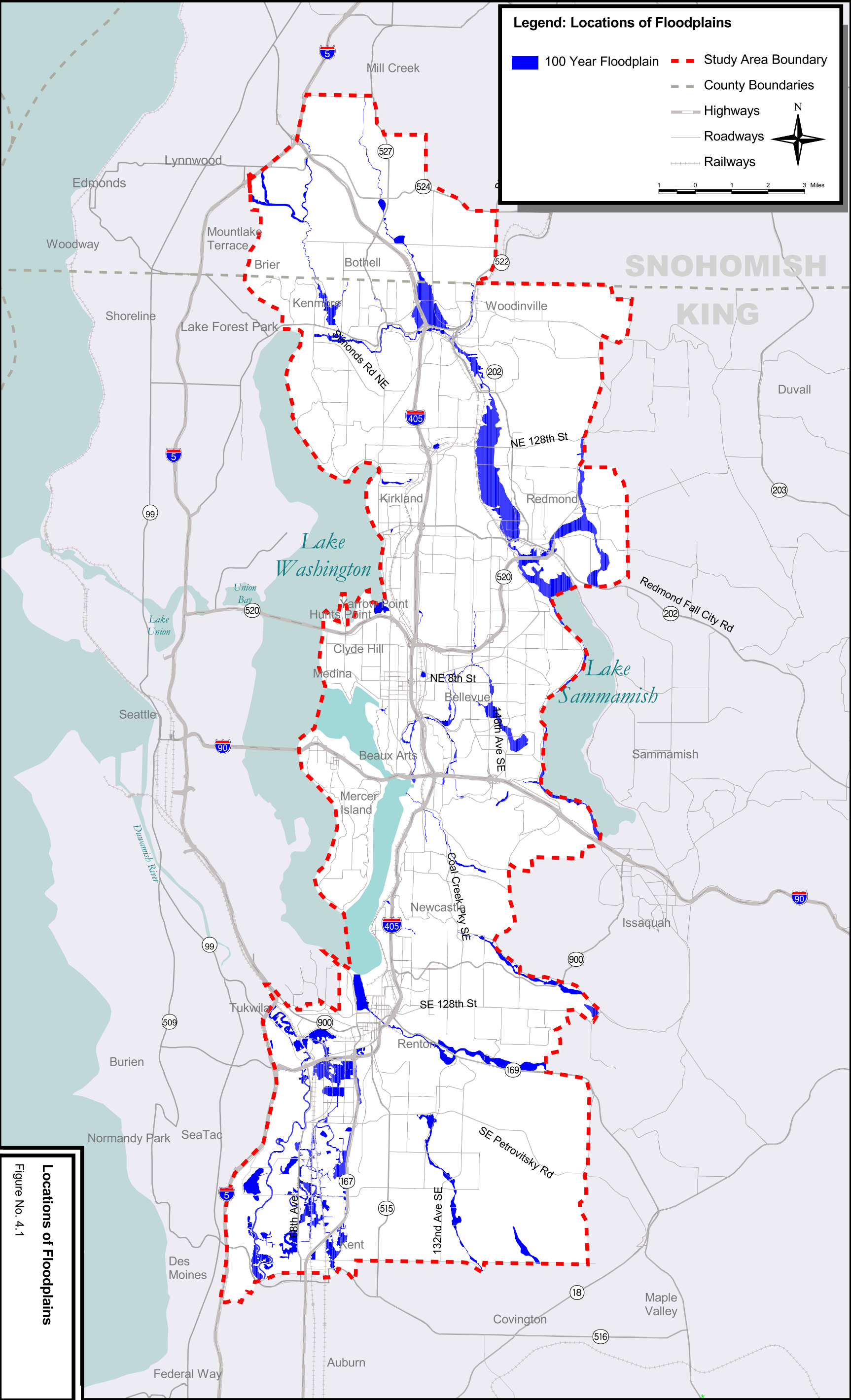


Figure No. 4.1

Locations of Floodplains

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4.5 Types of Floodplain Mitigation

The best type of mitigation is to limit the amount of fill in floodplains. This can be accomplished by building walls or steep engineered fill slopes adjacent to the floodplain rather than standard fill slopes. When crossing a river, a longer bridge can be used to span the entire floodway. For a wide floodplain, the effect of the fill on the flood elevation would be analyzed. If there is a detrimental effect, a causeway-type bridge or overflow bridges would be built. If floodplain storage is lost, an equal volume would be replaced in the same floodplain by excavation, demolition of a structure, or transfer of density rights. The loss of ecological functions is usually accompanied by a loss of riparian or wetland area and would be mitigated by enhancement, restoration, or replacement. Other possible mitigation measures include widening existing bridges, increasing existing culvert sizes, or replacing existing culverts with bridges. Mitigation anywhere along the stream system, including purchase of development rights, can reduce flood flows and limit the rise in the floodplain.

All stream crossing widenings or new crossings would be designed in accordance with WSDOT *Hydraulics Manual* (WSDOT, 1997) for flow passage and the Washington Department of Fish and Wildlife (WDFW) *Fish Passage Design at Road Culverts* (WDFW, 1999) for fish passage. The design and construction plans and specifications would be prepared in conjunction with biologists to reduce impacts on the natural stream bed and would mitigate impacts by placing gravel in the culverts, planting riparian trees, and using other natural features such as log weirs, boulders, and other types of woody debris. Construction would be done during low flow periods that are least likely to harm fish and other wildlife in accordance with WDFW requirements.

Maintenance of stream crossing structures would be reduced by selecting materials with long lives and low maintenance requirements and by selecting larger sizes of culverts or bridges with more clearance. These large sizes would have less tendency to plug with floating debris or sediment deposition. When maintenance is required, it would be done during low flow with the least obtrusive processes possible.

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5. IMPACT ANALYSIS

5.1 No Action Alternative

Under the No Action Alternative, which includes 55 projects, there are 6 projects that would potentially impact 5 floodplains, identified in Table 5.1. This includes 5 culvert or bridge crossings of the floodway. The potential length of floodplain impact is 13,950 feet. The square footage of floodplain impacted or the volume of lost storage cannot be estimated at this time. Two of the projects are new roads across the Samammish River floodplain that should include flood storage mitigation in the design to avoid storage impacts. Another project is a road across the Springbrook Creek floodplain that will also need to include flood storage mitigation in the design to avoid storage impacts. Figure 5.1 shows the location of the No Action Alternative projects with respect to floodplains in the study area.

5.1.1 Construction Impacts

During construction, no impacts to the floodplain storage are anticipated. There may be impacts to floodplain ecological functions. The discussion of impacts to ecological functions can be found in the I-405 Corridor Program Draft Wetlands and Fish and Aquatic Habitat Expertise Reports (DEA, 2001). In the event that flooding occurs, equipment would need to be moved out of the floodplain.

5.1.2 Operational Impacts

No operational impacts are anticipated, since the roadway can be designed to avoid the floodway and structures would be designed to result in a zero increase in flood elevation.

5.2 Alternative 1: High-Capacity Transit/Transportation Demand Management

Alternative 1 includes 125 projects ranging from basic improvements to I-405 to high-capacity transit. Alternative 1 assumes all of the No Action Alternative projects will be built and estimates the increase in impacts above the No Action Alternative. Seventeen of the Alternative 1 projects either enter or cross 100-year floodplains. Fourteen different floodplains, identified in Table 5.2, are either crossed or are adjacent to the projects proposed in Alternative 1. There are seventeen floodway crossings by culverts or bridges that will be lengthened or replaced and the potential for 17,700 linear feet of floodplain impacts. The square footage of floodplain impacted or the volume of lost storage cannot be estimated at this time, though the square footage impact on floodplains adjacent to I-405 would be relatively low, with only one new lane in limited areas. Figure 5.2 shows the location of Alternative 1 projects with respect to floodplains in the study area.

5.2.1 Construction Impacts

During construction, no impacts to the floodplain storage are anticipated. There may be impacts to floodplain ecological functions. The discussion of impacts to ecological functions can be found in the I-405 Corridor Program Draft Wetlands and Fish and Aquatic Habitat Expertise Reports (DEA, 2001). In the event that flooding occurs, equipment would need to be moved out of the floodplain.

5.2.2 Operational Impacts

No operational impacts are anticipated, since the roadway can be designed to avoid the floodway and structures would be designed to result in a zero increase in flood elevation.



5.3 Alternative 2: Mixed Mode with High-Capacity Transit/Transit Emphasis

Alternative 2 includes 179 projects ranging from basic improvements to I-405 to high-capacity transit and a number of arterial projects. Alternative 2 assumes all of the No Action Alternative projects will be built and estimates the increase in impacts above the No Action Alternative. Thirty-one of the Alternative 2 projects either enter or cross 100-year floodplains. Fourteen floodplains, identified in Table 5.3, are either crossed or are adjacent to the projects proposed in Alternative 2. There are thirty-six crossings of the floodway by culverts or bridges that will be lengthened or replaced and the potential for 30,325 linear feet of floodplain impacts. The square footage of floodplain impacted or the volume of lost storage cannot be estimated at this time, though the square footage impact on floodplains adjacent to I-405 would be moderate, with one auxiliary lane in limited areas and one new general purpose lane. Figure 5.3 shows the location of Alternative 2 projects with respect to floodplains in the study area.

5.3.1 Construction Impacts

During construction, no impacts to the floodplain storage are anticipated. There may be impacts to floodplain ecological functions. The discussion of impacts to ecological functions can be found in the I-405 Corridor Program Draft Wetlands and Fish and Aquatic Habitat Expertise Reports (DEA, 2001). In the event that flooding occurs, equipment would need to be moved out of the floodplain.

5.3.2 Operational Impacts

No operational impacts are anticipated, since the roadway can be designed to avoid the floodway and structures would be designed to result in a zero increase in flood elevation.



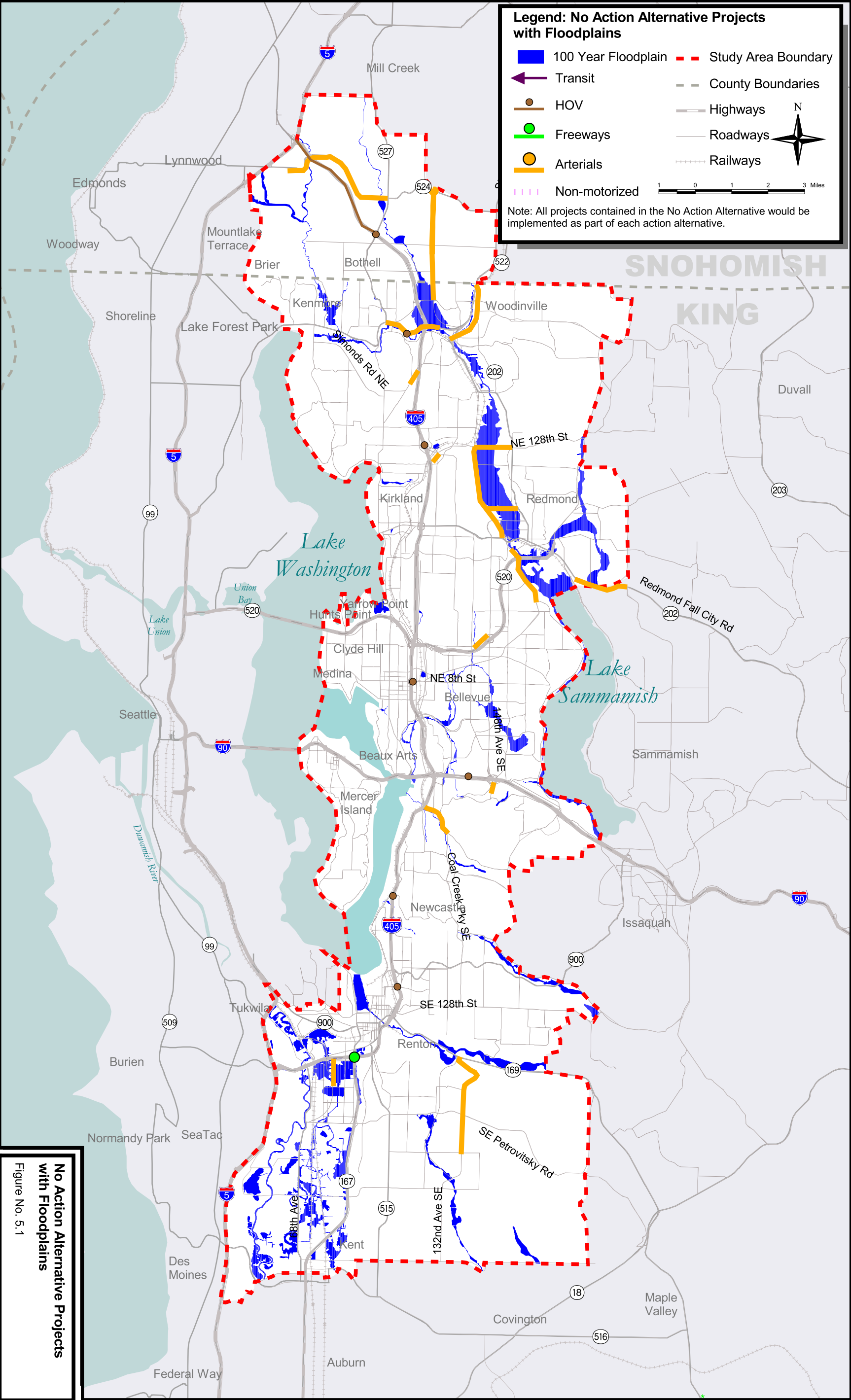
5.4 Alternative 3: Mixed Mode Emphasis

Alternative 3 includes 166 projects ranging from basic improvements to I-405 and the addition of two general purpose lanes on I-405 to high-capacity transit and a number of arterial projects. Alternative 3 assumes all of the No Action Alternative projects will be built and estimates the increase in impacts above the No Action Alternative. Thirty of the Alternative 3 projects either enter or cross 100-year floodplains. Fourteen floodplains, identified in Table 5.4, are either crossed or are adjacent to the projects proposed in

Table 5.1: Floodplains Potentially Impacted by the No Action Alternative

Jurisdiction		Actions	Floodplain Analysis
10. Committed Freeway Projects			
WSDOT	R-55	I-405/SR167 Interchange/Construct new southbound I-405-to-southbound SR 167 ramp modification.	Patches of Springbrook Creek floodplain are near the I-405/SR 167 interchange. As part of design, any lost storage in the floodplain would need to be replaced. Springbrook Creek floodway is crossed by a bridge on I-405 and the floodplain is also adjacent for approximately 2,500 feet. Springbrook Creek floodplain is also adjacent to SR 167 for 2,000 feet and Rolling Hills Creek floodplain is adjacent to I-405 for 1,200 feet. The existing bridge can be widened to span the floodway and new storage can be added in the design to replace any lost floodplain storage if needed.
17. Committed Arterial Projects			
Bothell, Snohomish Co.	R.AC-21	120th Avenue NE/39th Avenue SE (NE 195th Street to Maltby Road Widen to 4/5 lanes incl. new connection	North Creek floodplain is adjacent for 1,000 feet. This section of floodplain is protected by a levee, however any lost storage in the floodplain will need to be replaced.
Redmond/ WSDOT	R-25	SR 202 Corridor Improvements (East Lake Sammamish Parkway to Sahalee Way): Widen to 3/5 lanes; intersection improvements with bike/pedestrian facilities	Evans Creek is crossed twice where the floodway is approximately 200 feet wide. The existing bridges and culverts can be widened if there are no impacts to the flood elevation or replaced with larger culverts or new bridges. Evans Creek floodplain is adjacent to SR 202 for 2,800 feet. New storage can be added in the design to replace any lost floodplain storage if needed.
Redmond	R-26	NE 90 th Street (Willows Road to SR 202): Construct new 4/5 lanes plus bike facilities.	Sammamish River floodplain and floodway crossed where floodway is 150 feet wide. A new bridge will be designed to span the floodway and avoid impacts. The floodplain is approximately 1,250 feet wide, and new storage can be added in the design to replace any lost floodplain storage if needed. The road across the floodplain will need to include overflow channels to insure there is no rise in the floodplain.
Renton	R-36	Oaksdale Avenue SW (SW 31st to SW 16th) - Construct new 5 lane roadway with CGS	Springbrook Creek floodplain is crossed for 2,100 feet. Springbrook Creek floodway is adjacent for 200 feet. The road will be designed to avoid any fill in the floodway. New storage can be added in the design to replace any lost floodplain storage if needed. The road across the floodplain will need to include overflow channels to insure there is no rise in the floodplain.
KCDOT	R-47	NE 124 th Street (Willows Road to SR 202): Widen to 4/5 lanes plus CGS, bike facilities; traffic signal.	Sammamish River floodplain and floodway crossed where floodway is 150 feet wide. The existing bridge can be widened or replaced to span the floodway and avoid impacts. The floodplain is approximately 1,100 feet wide, and new storage can be added in the design to replace any lost floodplain storage if needed. The road across the floodplain will need to include overflow channels to insure there is no rise in the floodplain.

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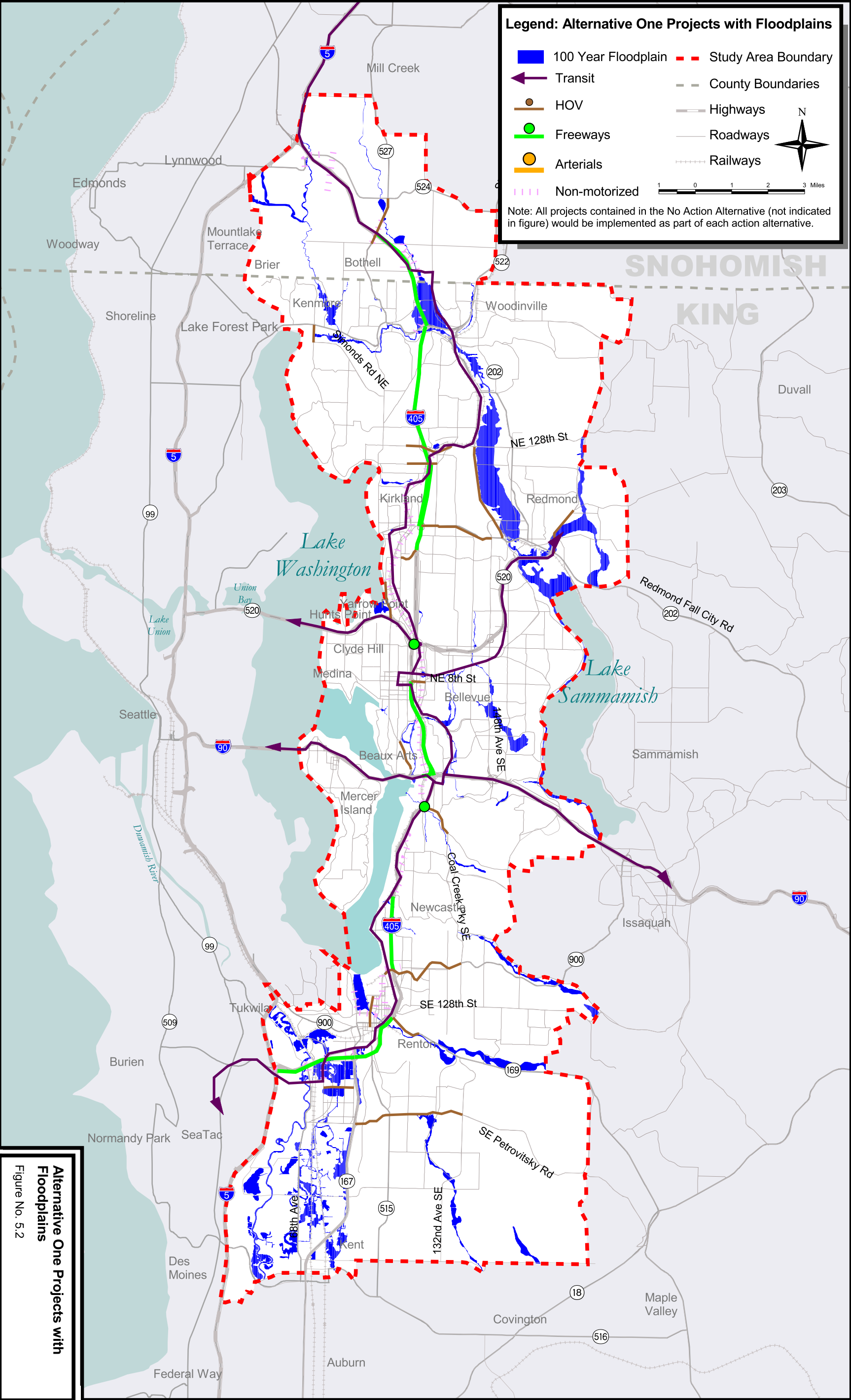
Table 5.2: Floodplains Potentially Impacted by Alternative 1

Jurisdiction		Actions	Floodplain Analysis
10. Basic I-405 Improvement Projects			
Renton	R.Bl.1	SR 167 Interchange – Direct Connection with auxilliary lane SB SR 169 to SR 167	Cedar River floodplain and floodway crossed where floodway is 200 feet wide. The existing bridge can be widened to span the floodway and avoid impacts. Rolling Hills Creek floodplain is adjacent to I-405 for 1,200 feet NE of SR 167. New storage can be added in the design to replace any lost floodplain storage if needed.
Bellevue	R.Bl.4	I-90/Coal Creek Interchange	Coal Creek floodway is 50 feet wide. The floodway is crossed and approximately 200 feet of the floodway and floodplain is adjacent to I-405. The floodway can be spanned by extension of the existing culvert and the floodplain can be spanned as part of interchange design to avoid impacts.
Renton	R.Bl.7	Kennydale Hill climbing lane: SR 900 to 44 th NB 900 to 30 th , SB 44 th – 30 th	May Creek floodplain is crossed by I-405 where it is 100 feet wide. The bridge can be widened to avoid impacts.
Bellevue	R.Bl.8	I-90 to Bellevue SB HOV direct connection to I-90 west	Mercer Creek floodplain is 100 feet wide where it is crossed by I-405. The existing culvert can be lengthened if there are no impacts to the flood elevation or replaced with a larger culvert if necessary for flood flow or fish passage.
6. Arterial HOV			
Bothell	R.HOV-41	SR 527 from SE 228 th Street to SR 524	North Creek is crossed where the floodway (and floodplain) is 100 feet wide. The existing culvert can be lengthened if there are no impacts to the flood elevation or replaced with a larger culvert if necessary for flood flow or fish passage.
Renton	R.HOV-43	SR 169 from SR 405 to Riverview Park Vicinity – HOV/Transit Preferential treatment	Cedar River floodplain and floodway is along the south side of SR 169 for 2000 feet. Widening may require retaining walls so there is no loss of floodway.
Renton	R.HOV-44	SW 27 th Street Corridor in Renton from Oaksdale Avenue to SR 167	Springbrook Creek is crossed where the floodway is 50 feet wide; it can be spanned to avoid impacts. Approximately 3,300 feet of floodplain storage area will be crossed and may need to be replaced during design. The road across the floodplain will need to include overflow channels to insure there is no rise in the floodplain.
Redmond	R. HOV-47	Avondale Road from Novelty Hill Road to Avondale Way/Construct SB HOV lane	Bear Creek floodplain and floodway is adjacent for 1,400 feet. New storage can be added in the design to replace any lost floodplain storage if needed.
Kenmore	R.HOV-53	68 th Avenue NE (Simonds Road to SR 522): Construct NB HOV lane.	Sammamish River floodplain and floodway crossed where floodway is 300 feet wide. The existing bridge can be widened to span the floodway and avoid impacts.

Jurisdiction		Actions	Floodplain Analysis
23. Freight (F)			
Renton	R.FR-10 & R.Bl.1	Modify SR 167 interchange for East to South Freight movements	Cedar River floodplain and floodway crossed where floodway is 200 feet wide. The existing bridge can be widened to span the floodway and avoid impacts. Rolling Hills Creek floodplain is adjacent to I-405 for 1,200 feet NE of SR 167. New storage can be added in the design to replace any lost floodplain storage if needed.
4. High-Capacity Transit			
Tukwila & Renton	T.HCT-1	HCT – SeaTac to Renton CBD	Springbrook Creek floodplain is crossed by I-405 and is also adjacent for approximately 2,500 feet. The floodway can be spanned by widening the existing bridge to avoid impacts and new storage to replace lost flood fringe storage can be included in design. Green River floodplain and floodway are 250 feet wide where I-405 crosses. The floodway can be spanned by widening the existing bridge to avoid impacts.
Renton	T.HCT-2	HCT-Renton CBD to NE 44 th (Port Quendall)	May Creek floodplain is crossed by I-405 where it is 100 feet wide. It can be spanned by widening the existing bridge to avoid impacts.
Renton, Newcastle & Bellevue	T.HCT-3	HCT-NE 44 th (Port Quendall) to Factoria	Coal Creek floodway is 50 feet wide. The floodway is crossed and approximately 200 feet of the floodway and floodplain is adjacent to I-405. The floodway can be spanned by extension of the existing culvert and the floodplain can be spanned as part of the design to avoid impacts.
Bellevue & Issaquah	T.HCT-4	HCT – Factoria to Issaquah	Richards Creek and Richards Creek West Tributary are crossed by I-90. The West Tributary floodplain is approximately 200 feet wide and Richards Creek floodplain is 50 feet wide. The existing culverts can be lengthened if there are no impacts to the flood elevation or replaced with a larger culverts if necessary for flood flow or fish passage. Tibbets Creek floodplain extends 3,000 feet along the south side of I-90. The floodway is also crossed where it is 50 feet wide. Impacts to the floodway can be avoided by spanning it, but new storage will need to be included in design to replace portions of the floodway lost due to filling. Issaquah Creek is crossed where the floodplain and floodway are 100 feet wide. Impacts can be avoided by widening the existing bridge spanning the floodway.
21. Pedestrian and Bicycle Facilities (P&B) I-405 Crossings			
Bothell	NM.CR-2	Fitzgerald Road/27 th Avenue – crossing I-405 from 228 th Street SE to 240 th Street SE – add pedestrian/bike facility	North Creek is crossed where the floodway is 100 feet wide The existing culvert can be lengthened if there are no impacts to the flood elevation or replaced with a larger culvert if necessary for flood flow or fish passage. Approximately 100 feet of floodplain is adjacent to the project and retaining walls may be required to avoid loss of storage.

Jurisdiction		Actions	Floodplain Analysis
Bothell	NM. CR-7	Connection between Sammamish River Trail and North Creek Trail between SR 522 and NE 195 th Street	Sammamish River floodplain crossed where it is 50 feet wide. A ground level trail would not impact floodplain functions. The North Creek flood fringe for the 500-year flood is adjacent to I-405 and an adjacent pathway can be developed without impacting the 100-year floodplain.
21. Pedestrian/Bicycle Connections			
Bothell	NM.P&B-5	North Creek Trail Link – 240 th to 232 nd , add pedestrian/bike trail	Trail along North Creek could be designed to avoid impacts to the floodplain.
Renton	NM.P&B-14	Cedar River Trail S. Extension – I-405 to Burnett Avenue – Add pedestrian/bike facilities	Cedar River floodplain and floodway is adjacent to the proposed trail for approximately 2,000 feet. A ground level trail would not impede flow or take floodplain storage. No impacts are anticipated.
Renton	NM.P&B-17	I-405/SR 167 trail connection – Lind Avenue SE to Talbot Road South – Add trail connection	Approximately 1,000 feet of Springbrook Creek's floodplain would be crossed. A ground level trail would not impact floodplain functions.
Renton/ Tukwila	NM.P&B-18	I-405/I-5 – via or around I-405/I-5 interchange – Add pedestrian/bike facilities	The Cedar River, Green River, and Springbrook Creek floodplains are crossed by this project. A ground level trail would not impact floodplain functions.

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Legend: Alternative One Projects with Floodplains

- | | |
|---------------------|---------------------|
| 100 Year Floodplain | Study Area Boundary |
| Transit | County Boundaries |
| HOV | Highways |
| Freeways | Roadways |
| Arterials | Railways |
| Non-motorized | |

Note: All projects contained in the No Action Alternative (not indicated in figure) would be implemented as part of each action alternative.

Alternative One Projects with Floodplains
Figure No. 5.2

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Table 5.3: Floodplains Potentially Impacted by Alternative 2

Jurisdiction		Actions	Floodplain Analysis
10. Basic I-405 Improvement Project			
Renton	R.Bl.1	ST 167 Interchange – Direct Connection with auxiliary lane SB SR 169 to SR 167	Cedar River floodplain and floodway crossed where floodway is 200 feet wide. The existing bridge can be widened to span the floodway and avoid impacts. Rolling Hills Creek floodplain is adjacent to I-405 for 1,200 feet NE of SR 167. New storage can be added in the design to replace any lost floodplain storage if needed.
Bellevue	R.Bl.4	I-90/Coal Creek Interchange	Coal Creek floodway is 50 feet wide. The floodway is crossed and approximately 200 feet of the floodway and floodplain is adjacent to I-405. The floodway can be spanned by extension of the existing culvert and the floodplain can be spanned as part of interchange design to avoid impacts.
Renton	R.Bl.7	Kennydale Hill climbing lane – SR 900 to 44 th – NB 900 to 30 th , SB 44 th – 30 th	May Creek floodplain is crossed by I-405 where it is 100 feet wide. The bridge can be widened to avoid impacts.
Bellevue	R.Bl.8		Mercer Creek floodplain is 100 feet wide where it is crossed by I-405. The existing culvert can be lengthened if there are no impacts to the flood elevation or replaced with a larger culvert if necessary for flood flow or fish passage.
16. Connecting Freeway Capacity (Matched to fit I-405 Improvements)			
Bothell, Woodinville	R.CF.5	SR 522 Bothell to NE 195 th	Sammanish River floodway and floodplain is 100 feet wide. It can be spanned by widening the existing bridge to avoid impacts. North Creek floodway and floodplain is 100 feet wide and could be spanned by widening the existing bridge to avoid impacts. Bear Creek floodway and floodplain is 50 feet wide. The existing culvert can be lengthened if there are no impacts to the flood elevation or replaced with a larger culvert if necessary for flood flow or fish passage.
10A. One additional GP lane in each direction			
Tukwila & Renton	R.TC-9	One additional GP lane in each direction – SR 5 – SR 167	Green River floodplain and floodway are 250 feet wide where I-405 crosses. The existing bridge over the floodway can be widened to avoid impacts. Springbrook Creek floodplain is crossed by I-405 and is also adjacent for approximately 2,500 feet. The existing bridge over the floodway can be widened to avoid impacts and new storage to replace lost flood fringe storage can be included in design.
Renton	R.TC-10	One additional GP lane in each direction – SR 167 to SR 900/North Renton Interchange	Rolling Hills Creek floodplain is adjacent to I-405 for 1,200 feet. The floodway impacts can be minimized with retaining walls and new storage to replace lost flood fringe storage can be included in design. Cedar River floodplain and floodway are 200 feet wide where they are crossed by I-405 and existing bridges can be widened to avoid impacts.

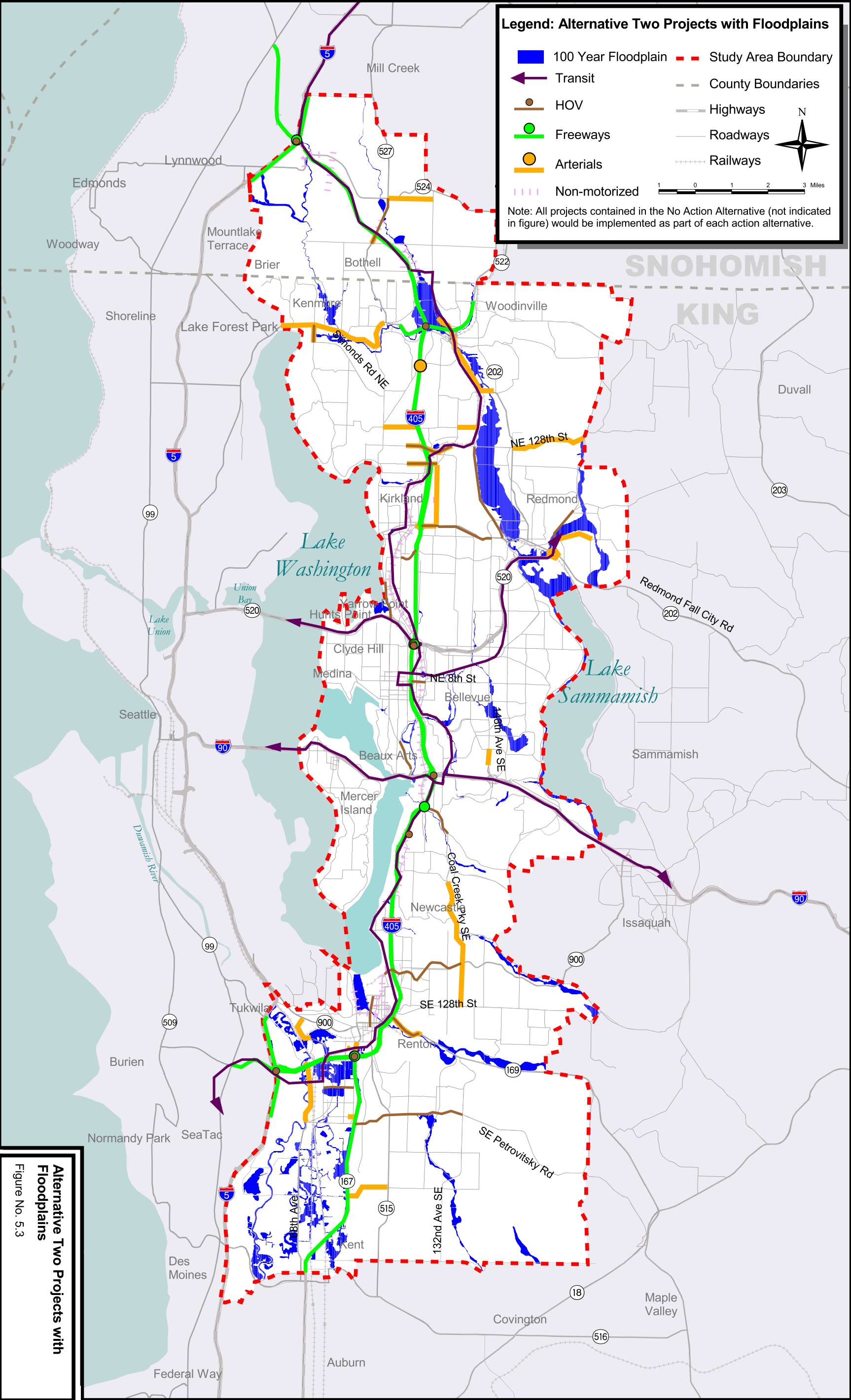
Jurisdiction		Actions	Floodplain Analysis
Renton, Newcastle & Bellevue	R.TC-11	One additional GP lane in each direction –SR 900/North Renton Interchange to SR 90	May Creek floodplain is crossed by I-405 where it is 100 feet wide. The bridge can be widened to avoid impacts. Coal Creek floodway is 50 feet wide. The floodway is crossed and approximately 200 feet of the floodway and floodplain is adjacent to I-405. The floodway can be spanned by extension of the existing culvert and the floodplain can be spanned as part of interchange design to avoid impacts.
Bellevue	R.TC-12	One additional GP lane in each direction –SR 90 to SR 520	Mercer Creek floodplain is 100 feet wide where it is crossed by I-405. The existing culvert can be lengthened if there are no impacts to the flood elevation or replaced with a larger culvert if necessary for flood flow or fish passage.
Kirkland Bothell	R.TC-15	One additional GP lane in each direction – NE 124 th to SR 522	Samammish River floodplain is crossed by I-405 where it is 100 feet wide. The bridge can be widened to avoid impacts.
Bothell	R.TC-16	One additional GP lane in each direction – SR 522 to SR 527	North Creek is crossed where the floodway (and floodplain) is 100 feet wide; impacts can be avoided by spanning the floodplain. The North Creek floodplain is adjacent for 2000 feet. Fills will be mitigated with retaining walls or replacement floodplain storage.
Sno. Co.	R.TC-17	One additional GP lane in each direction –SR 527 to SR 5 Swamp Creek	Swamp Creek is crossed where the floodway (and floodplain) is 100 feet wide; impacts can be avoided by spanning the floodplain.
19. Arterial Interchange Improvements (Matched to fit I-405 Improvements)			
Bothell	R.IC-11	SR 527 – 228 th to SR 524	North Creek is crossed where the floodway (and floodplain) is 100 feet wide. The existing culvert can be lengthened if there are no impacts to the flood elevation or replaced with a larger culvert if necessary for flood flow or fish passage.
7. HOV Interchange Ramps (Direct Access)			
Renton	R.HOV-26	SR 167 Interchange Freeway to Freeway HOV ramps	Patches of Springbrook Creek Floodplain (flood fringe) are near the I-405/SR 167 interchange. As part of design, any lost storage would need to be replaced.
Bothell	R.HOV-29	SR 522 Freeway to Freeway HOV ramps	North Creek abuts I-405 and SR 522. Widening would require that design include additional floodplain storage be created to offset storage lost by filling.
6. Arterial HOV			
Bothell	R.HOV-41	SR 527 from SE 228 th Street to SR 524	North Creek is crossed where the floodway (and floodplain) is 100 feet wide; impacts can be avoided by spanning the floodplain.
Renton	R.HOV-43	SR 169 from SR 405 to Riverview Park Vicinity – HOV/Transit Preferential treatment	Cedar River floodplain and floodway is along the south side of SR 169 for 2000 feet. Widening may require retaining walls so there is no loss of floodway.

Jurisdiction		Actions	Floodplain Analysis
Renton	R.HOV-44	SW 27 th Street to Corridor in Renton from Oaksdale Avenue to SR 167	Springbrook Creek is crossed where the floodway is 50 feet wide; it can be spanned to avoid impacts. Approximately 3,300 feet of floodplain storage area will be crossed and may need to be replaced during design. The road across the floodplain will need to include overflow channels to insure there is no rise in the floodplain.
Redmond	R.HOV-47	Avondale Road from Novelty Hill Road to Avondale Way/Construct SB HOV lane	Bear Creek floodplain and floodway is adjacent for 1,400 feet. New storage can be added in the design to replace any lost floodplain storage if needed.
Kenmore	R.HOV-53	68 th Avenue NE (Simonds Road to SR 522) – Construct NB HOV lane	Sammamish River floodplain and floodway crossed where floodway is 300 feet wide. The existing bridge can be widened to span the floodway and avoid impacts.
23. Freight (F)			
Renton	R.FR-10 & R.Bl.1	Modify SR 167 Interchange for East to South Freight movements	Cedar River floodplain and floodway crossed where floodway is 200 feet wide. The existing bridge can be widened to span the floodway and avoid impacts. Rolling Hills Creek floodplain is adjacent to I-405 for 1,200 feet NE of SR 167. New storage can be added in the design to replace any lost floodplain storage if needed.
4. High-Capacity Transit			
Tukwila & Renton	T.HCT-1	HCT-SeaTac to Renton CBD	Green River floodplain and floodway are 250 feet wide where I-405 crosses. The existing bridge over the floodway can be widened to avoid impacts. Springbrook Creek floodplain is crossed by I-405 and is also adjacent for approximately 2,500 feet. The existing bridge over the floodway can be widened to avoid impacts and new storage to replace lost flood fringe storage can be included in design.
Renton	T.HCT-2	HCT-Renton CBD to NE 44 th (Port Quendall)	May Creek floodplain is crossed by I-405 where it is 100 feet wide. It can be spanned to avoid impacts. Cedar River floodplain and floodway are 200 feet wide where they are crossed by I-405 and can be spanned to avoid impacts.
Renton, Newcastle & Bellevue	T.HCT-3	HCT-NE 44th (Port Quendall) to Factoria	Coal Creek floodway is 50 feet wide. The floodway is crossed and approximately 200 feet of the floodway and floodplain is adjacent to I-405. The floodway can be spanned by extension of the existing culvert and the floodplain can be spanned as part of interchange design to avoid impacts.

Jurisdiction		Actions	Floodplain Analysis
Bellevue & Issaquah	T.HCT-4	HCT – Factoria to Issaquah	Richards Creek and Richards Creek West Tributary are crossed by I-90. The West Tributary floodplain is approximately 200 feet wide and Richards Creek floodplain is 50 feet wide. The existing culverts can be lengthened if there are no impacts to the flood elevation or replaced with larger culverts if necessary for flood flow or fish passage. Tibbets Creek floodplain extends 3,000 feet along the south side of I-90. The floodway is also crossed where it is 50 feet wide. Impacts to the floodway can be avoided by spanning it, but new storage will need to be included in design to replace portions of the floodway lost due to filling. Issaquah Creek is crossed where the floodplain and floodway are 100 feet wide. Impacts can be avoided by spanning the floodway. It appears that there is sufficient space to add lanes near Issaquah Creek without impacting the flood fringe.
PEDESTRIAN AND BICYCLE FACILITIES (P&B)			
21. I-405 Crossings			
Bothell	NM.CR-2	Fitzgerald Road/27 th Avenue – crossing I-405 from 228 th Street SE to 240 th Street SE – add pedestrian/bike facility	North Creek is crossed where the floodway is 100 feet wide The existing culvert can be lengthened if there are no impacts to the flood elevation or replaced with a larger culvert if necessary for flood flow or fish passage. Approximately 100 feet of floodplain is adjacent to the project and retaining walls may be required to avoid loss of storage.
Bothell	NM.CR-7	Connection between Sammamish River Trail and North Creek Trail – between SR 522 and NE 195 th Street – Add pedestrian/bike overcrossing of I-405	The North Creek flood fringe for the 500-year flood is adjacent to I-405. A crossing of I-405 and an adjacent pathway can be developed without impacting the 100-year floodplain. Sammamish River floodplain crossed where it is 50 feet wide. A ground level trail would not impact floodplain functions.
21. Pedestrian/Bicycle Connections			
Bothell	NM. P&B-5	North Creek Trail Link – 240 th to 232 nd – add pedestrian/ bike trail	Trail along North Creek could be designed to avoid impacts to the floodplain.
Renton	NM. P&B-17	I-405/SR 167 trail connection – Lind Avenue SE to Talbot Road South – add trail connection	Approximately 1,000 feet of Springbrook Creek's floodplain would be crossed. A ground-level trail would not impact floodplain functions.

Jurisdiction		Actions	Floodplain Analysis
17. Planned Arterial Projects			
Bothell	R.PA-3	SR 522 Multimodal Corridor Project – Widen SR 522 mostly within existing ROW to provide transit lanes, safety improvements, consolidated driveways and left turn lanes and sidewalks (ETP R-107)	Swamp Creek crossed where floodplain is 75 feet wide. Floodway spanned. Widening can take place without impact if the floodplain is spanned.
Redmond	R.PA-17	Bear Creek Parkway - Construct new 162nd Ave NE and new 72nd Street. Widen Bear Creek Parkway	Bear Creek floodway and floodplain is adjacent for approximately 1700 feet. New storage can be added to replace any lost floodplain storage if needed.
Redmond	R.PA-18	Union Hill Road (Avondale Road to 196 th Avenue NE) – widen to 4/5 lanes with bike facilities (ETP R-27)	Bear Creek is crossed where the floodway is 100 feet wide. The existing culvert can be lengthened or replaced with a bridge if required for fish passage to span the floodway. Bear Creek floodplain is adjacent for approximately 600 feet. New storage can be added to replace any lost floodplain storage if needed. Evans Creek is crossed where the floodway is 200 feet wide. The existing culvert can be lengthened or replaced with a bridge if required for fish passage to span the floodway.
Renton	R.PA-20	Oaksdale Avenue SW (Monster Road to SR 900) Replace Monster Road Bridge; widen to 4/5 lanes +bike lanes +CGS (ETP R-35)	Black River is crossed where the floodplain is 50 feet wide. The existing bridge can be widened to span the floodplain.
Woodinville	R.PA-25 & R.AC.30	SR 522 Interchange Package (SR 522/SR 202 & SR 522/195 th Street) – Access improvements and new freeway ramps (ETP R-53) (See R.AC-30)	Sammamish River floodplain is 100 feet wide. The existing bridge can be widened to span the floodplain. North Creek is crossed where the floodway is 100 feet wide; it can be spanned to avoid impacts. The North Creek floodplain is adjacent for 2000 feet and the Sammamish River floodplain is adjacent for 500 feet. Fills will be mitigated with retaining walls or replacement floodplain storage.

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Legend: Alternative Two Projects with Floodplains

- | | |
|---------------------|---------------------|
| 100 Year Floodplain | Study Area Boundary |
| Transit | County Boundaries |
| HOV | Highways |
| Freeways | Roadways |
| Arterials | Railways |
| Non-motorized | |

Note: All projects contained in the No Action Alternative (not indicated in figure) would be implemented as part of each action alternative.

Alternative Two Projects with Floodplains
Figure No. 5.3

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Table 5.4: Floodplains Potentially Impacted by Alternative 3

Jurisdiction		Actions	Floodplain Analysis
10. Basic I-405 Improvement Projects			
Renton	R.BI.1	SR 167 Interchange – Direct Connection with auxiliary lane SB SR 169 to SR 167	Cedar River floodplain and floodway crossed where floodway is 200 feet wide. The existing bridge can be widened to span the floodway and avoid impacts. Rolling Hills Creek floodplain is adjacent to I-405 for 1,200 feet NE of SR 167. New storage can be added in the design to replace any lost floodplain storage if needed.
Bellevue	R.BI.4	I-90/Coal Creek Interchange	Coal Creek floodway is 50 feet wide. The floodway is crossed and approximately 200 feet of the floodway and floodplain is adjacent to I-405. The floodway can be spanned by extension of the existing culvert and the floodplain can be spanned as part of interchange design to avoid impacts.
11. Two additional GP lanes in each direction			
Tukwila & Renton	R.TC-1	Two additional GP lanes in each direction – SR 5 – SR 167	Green River floodplain and floodway are 250 feet wide where I-405 crosses. The existing bridge over the floodway can be widened to avoid impacts. Springbrook Creek floodplain is crossed by I-405 and is also adjacent for approximately 2,500 feet. The existing bridge over the floodway can be widened to avoid impacts and new storage to replace lost flood fringe storage can be included in design.
Renton	R.TC-2	Two additional GP lanes in each direction – SR 167 to SR 900/North Renton Interchange	Rolling Hills Creek floodplain is adjacent to I-405 for 1,200 feet. The floodway impacts can be minimized with retaining walls and new storage to replace lost flood fringe storage can be included in design. Cedar River floodplain and floodway are 200 feet wide where they are crossed by I-405 and existing bridges can be widened to avoid impacts.
Renton, Newcastle & Bellevue	R.TC-3	Two additional GP lanes in each direction –SR 900/North Renton Interchange to SR 90	May Creek floodplain is crossed by I-405 where it is 100 feet wide. The bridge can be widened to avoid impacts. Coal Creek floodway is 50 feet wide. The floodway is crossed and approximately 200 feet of the floodway and floodplain is adjacent to I-405. The floodway can be spanned by extension of the existing culvert and the floodplain can be spanned as part of interchange design to avoid impacts.
Bellevue	R.TC-4	Two additional GP lanes in each direction –SR 90 to SR 520	Mercer Creek floodplain is 100 feet wide where it is crossed by I-405. The existing culvert can be lengthened if there are no impacts to the flood elevation or replaced with a larger culvert if necessary for flood flow or fish passage.
Kirkland Bothell	R.TC-7	Two additional GP lanes in each direction – NE 124 th to SR 522	Samammish River floodplain is crossed by I-405 where it is 100 feet wide. The bridge can be widened to avoid impacts.
Bothell	R.TC-8	Two additional GP lanes in each direction – SR 522 to SR 527	North Creek is crossed where the floodway (and floodplain) is 100 feet wide; impacts can be avoided by spanning the floodplain. The North Creek floodplain is adjacent for 2000 feet. Fills will be mitigated with retaining walls or replacement floodplain storage.

Jurisdiction		Actions	Floodplain Analysis
Sno. Co.	R.TC-9	Two additional GP lanes in each direction –SR 527 to SR 5 Swamp Creek	Swamp Creek is crossed where the floodway (and floodplain) is 100 feet wide; impacts can be avoided by spanning the floodplain.
16. Connecting Freeway Capacity (Matched to fit I-405 Improvements)			
Bothell, Woodinville	R.CF.5	SR 522 Bothell to NE 195th	Sammamish River floodway and floodplain is 100 feet wide. It can be spanned by widening the existing bridge to avoid impacts. North Creek floodway and floodplain is 100 feet wide and could be spanned by widening the existing bridge to avoid impacts. Bear Creek floodway and floodplain is 50 feet wide. The existing culvert can be lengthened if there are no impacts to the flood elevation or replaced with a larger culvert if necessary for flood flow or fish passage.
18. Arterial Capacity Actions			
Renton	R.AC-3	138th Avenue SE (SR 169 to NE 4th Street) - widen to 4/5 lanes	Cedar River is crossed where the floodway is 300 feet wide. The existing bridge can be replaced to span the floodplain.
19. Arterial Interchange Improvements (Matched to fit I-405 Improvements)			
Bothell	R.IC-11	SR 527-228 th to SR 524	North Creek is crossed where the floodway (and floodplain) is 100 feet wide; impacts can be avoided by spanning the floodplain.
7. HOV Interchange Ramps (Direct Access)			
Renton	R.HOV-26	SR 167 Interchange Freeway to Freeway HOV ramps	Patches of Springbrook Creek Floodplain (flood fringe) are near the I-405/SR 167 interchange. As part of design, any lost storage would need to be replaced.
Bothell	R.HOV-29	SR 522 Freeway to Freeway HOV ramps	North Creek abuts I-405 and SR 522. Widening would require that design include additional floodplain storage be created to offset storage lost by filling.
6. Arterial HOV			
Bothell	B.HOV-41	SR 527 from SE 228 th Street to SR 524	North Creek is crossed where the floodway (and floodplain) is 100 feet wide; impacts can be avoided by spanning the floodplain.
Renton	R.HOV-43	SR 169 from SR 405 to Riverview Park Vicinity – HOV/Transit Preferential treatment	Cedar River floodplain and floodway is along the south side of SR 169 for 2000 feet. Widening may require retaining walls so there is no loss of floodway.
Renton	R.HOV-44	SW 27 th Street Corridor in Renton from Oaksdale Avenue to SR 167	Springbrook Creek is crossed where the floodway is 50 feet wide; it can be spanned to avoid impacts. Approximately 3,300 feet of floodplain storage area will be crossed and may need to be replaced during design. The road across the floodplain will need to include overflow channels to insure there is no rise in the floodplain.
Redmond	R.HOV-47	Avondale Road from Novelty Hill Road to Avondale Way/Construct SB HOV lane	Bear Creek floodplain and floodway is adjacent for 1,400 feet. New storage can be added in the design to replace any lost floodplain storage if needed.

Jurisdiction		Actions	Floodplain Analysis
Kenmore	HOV-53	68 th Avenue NE (Simonds Road to SR 522): Construct NB HOV lane.	Sammamish River floodplain and floodway crossed where floodway is 300 feet wide. The existing bridge can be widened to span the floodway and avoid impacts.
23. Freight (F)			
Renton	R.FR-10 & R.Bl.1	Modify SR 167 Interchange for East to South Freight movements	Cedar River floodplain and floodway crossed where floodway is 200 feet wide. The existing bridge can be widened to span the floodway and avoid impacts. Rolling Hills Creek floodplain is adjacent to I-405 for 1,200 feet NE of SR 167. New storage can be added in the design to replace any lost floodplain storage if needed.
4. High-Capacity Transit			
Tukwila & Renton	T.HCT-1	HCT – SeaTac to Renton CBD	Green River floodplain and floodway are 250 feet wide where I-405 crosses. The existing bridge over the floodway can be widened to avoid impacts. Springbrook Creek floodplain is crossed by I-405 and is also adjacent for approximately 2,500 feet. The existing bridge over the floodway can be widened to avoid impacts and new storage to replace lost flood fringe storage can be included in design.
Renton	T.HCT-2	HCT-Renton CBD to NE 44 th (Port Quendall)	May Creek floodplain is crossed by I-405 where it is 100 feet wide. It can be spanned to avoid impacts. Cedar River floodplain and floodway are 200 feet wide where they are crossed by I-405 and can be spanned to avoid impacts.
Renton, Newcastle, & Bellevue	T.HCT-3	HCT – NE 44 th (Port Quendall) to Factoria	Coal Creek floodway is 50 feet wide. The floodway is crossed and approximately 200 feet of the floodway and floodplain is adjacent to I-405. The floodway can be spanned by extension of the existing culvert and the floodplain can be spanned as part of interchange design to avoid impacts.
Bellevue & Issaquah	T.HCT-4	HCT – Factoria to Issaquah	Richards Creek and Richards Creek West Tributary are crossed by I-90. The West Tributary floodplain is approximately 200 feet wide and Richards Creek floodplain is 50 feet wide. The existing culverts can be lengthened if there are no impacts to the flood elevation or replaced with larger culverts if necessary for flood flow or fish passage. Tibbets Creek floodplain extends 3,000 feet along the south side of I-90. The floodway is also crossed where it is 50 feet wide. Impacts to the floodway can be avoided by spanning it, but new storage will need to be included in design to replace portions of the floodway lost due to filling. Issaquah Creek is crossed where the floodplain and floodway are 100 feet wide. Impacts can be avoided by spanning the floodway. It appears that there is sufficient space to add lanes near Issaquah Creek without impacting the flood fringe.

Jurisdiction		Actions	Floodplain Analysis
PEDESTRIAN AND BICYCLE FACILITIES (P&B)			
21. I-405 Crossings			
Bothell	NM.CR-2	Fitzgerald Road/27 th Avenue crossing I-405 from 228 th Street SE to 240 th Street SE - - add pedestrian/bike facility	North Creek is crossed where the floodway is 100 feet wide The existing culvert can be lengthened if there are no impacts to the flood elevation or replaced with a larger culvert if necessary for flood flow or fish passage. Approximately 100 feet of floodplain is adjacent to the project and retaining walls may be required to avoid loss of storage.
Bothell	NM.CR-7	Connection between Sammamish River Trail and North Creek Trail – between SR 522 and NE 195 th Street – add pedestrian/bike overcrossing of I-405	The North Creek flood fringe for the 500-year flood is adjacent to I-405. A crossing of I-405 and an adjacent pathway can be developed without impacting the 100-year floodplain. Sammamish River floodplain crossed where it is 50' wide. A ground level trail would not impact floodplain functions.
21. Pedestrian/Bicycle Connections			
Bothell	NM.P&B-5	North Creek Trail Link – 240 th to 232 nd – add pedestrian/bike trail	Trail along North Creek could be designed to avoid impacts to the floodplain.
Renton	NM.P&B-14	Cedar River Trail S. Extension – I-405 to Burnett Avenue – add pedestrian/bike facilities	Cedar River floodplain (floodway) is adjacent to the proposed trail for approximately 2000 feet. A ground level trail would not impede flows or take flood fringe storage. No impacts are anticipated.
Renton	NM.P&B-17	I-406/SR 167 trail connection – Lind Avenue SE to Talbot Road South – add trail connection	Approximately 1000 feet of Springbrook Creek's floodplain would be crossed. A ground level trail would not impact floodplain functions.
Renton/ Tukwila	NM.P&B-18	I-405/I-5 – via or around I-405/I-5 interchange – add pedestrian/bike facilities	The Cedar River, Green River, and Springbrook Creek floodplains are crossed by this project. A ground level trail would not impact floodplain functions.
17. Planned Arterial Projects			
Bothell	R.PA-3	SR 522 Multimodal Corridor Project--- Widen SR-522 mostly within existing ROW to provide transit lanes, safety improvements, consolidated driveways & left turn lanes; and sidewalks. (ETP R-107)	Swamp Creek crossed where floodplain is 75 feet wide. Floodway spanned. Widening can take place without impact if the floodplain is spanned.
Redmond	R.PA-17	Bear Creek Parkway - Construct new 162nd Ave NE and new 72nd Street. Widen Bear Creek Parkway	Bear Creek floodway and floodplain is adjacent for approximately 1700 feet. New storage can be added to replace any lost floodplain storage if needed.

Jurisdiction		Actions	Floodplain Analysis
Redmond	R.PA-18	Union Hill Road (Avondale Road to 196 th Avenue NE) – widen to 4/5 lanes with bike facilities (ETP R-27)	Bear Creek is crossed where the floodway is 100 feet wide. The existing culvert can be lengthened or replaced with a bridge if required for fish passage to span the floodway. Bear Creek floodplain is adjacent for approximately 600 feet. New storage can be added to replace any lost floodplain storage if needed. Evans Creek is crossed where the floodway is 200 feet wide. The existing culvert can be lengthened or replaced with a bridge if required for fish passage to span the floodway.
Renton	R.PA-20	Oaksdale Avenue SE (Monster Road to SR 900) – replace Monster Road Bridge; widen to 4/5 lanes +Bike Lanes +CGS (ETP R-35)	Black River is crossed where the floodplain is 50 feet wide. The existing bridge can be widened to span the floodplain.
Woodinville	R.PA-25 & R.AC-30	SR 522 Interchange Package (SR 522/SR 202 & SR 522/195 th Street) – Access improvements and new freeway ramps (ETP R-53) (see R.AC-30)	Sammamish River floodplain is 100 feet wide. The existing bridge can be widened to span the floodplain. North Creek is crossed where the floodway is 100 feet wide; it can be spanned to avoid impacts. The North Creek floodplain is adjacent for 2000 feet and the Sammamish River floodplain is adjacent for 500 feet. Fills will be mitigated with retaining walls or replacement floodplain storage.

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Alternative 3. There are thirty-five crossings of the floodway by culverts or bridges that will be lengthened or replaced and the potential for 30,425 linear feet of floodplain impacts. The square footage of floodplain impacted or the volume of lost storage cannot be estimated at this time, though the square footage impact on floodplains adjacent to I-405 would be high, with one auxiliary lane in limited areas and two new general purpose lanes. Figure 5.4 shows the location of Alternative 3 projects with respect to floodplains in the study area.

5.4.1 Construction Impacts

During construction, no impacts to the floodplain storage are anticipated. There may be impacts to floodplain ecological functions. The discussion of impacts to ecological functions can be found in the I-405 Corridor Program Draft Wetlands and Fish and Aquatic Habitat Expertise Reports (DEA, 2001). In the event that flooding occurs, equipment would need to be moved out of the floodplain.

5.4.2 Operational Impacts

No operational impacts are anticipated, since the roadway can be designed to avoid the floodway and structures would be designed to result in a zero increase in flood elevation.

5.5 Alternative 4: General Capacity Emphasis

Alternative 4 includes 129 projects ranging from basic improvements to I-405 and the addition of express lanes, one new general purpose lane, and major interchanges on I-405 to high-capacity transit and a number of arterial projects. Alternative 4 assumes all of the No Action Alternative projects will be built and estimates the increase in impacts above the No Action Alternative. Thirty of the Alternative 4 projects either enter or cross 100-year floodplains. Fourteen floodplains, identified in Table 5.5, are either crossed or are adjacent to the projects proposed in Alternative 4. There are thirty-six crossings of the floodway by culverts or bridges which will be lengthened or replaced and the potential for 25,225 linear feet of floodplain impacts. The square footage of floodplain impacted or the volume of lost storage cannot be estimated at this time, though the square footage impact on floodplains adjacent to I-405 would be high, especially Springbrook Creek and North Creek, with one auxiliary lane in limited areas, two new express lanes, and one new general purpose lanes. Figure 5.5 shows the location of Alternative 4 projects with respect to floodplains in the study area.

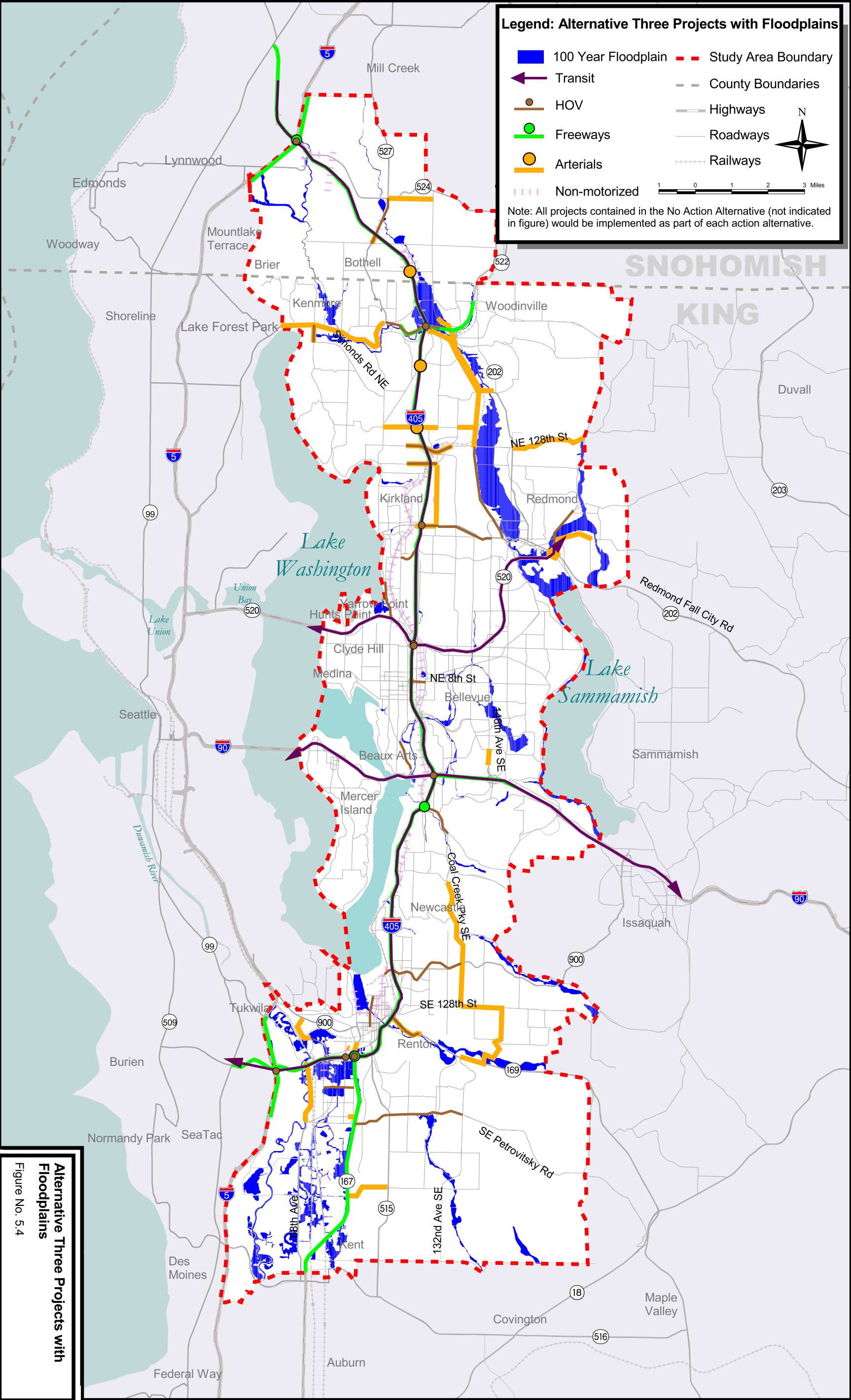
5.5.1 Construction Impacts

During construction, no impacts to the floodplain storage are anticipated. There may be impacts to floodplain ecological functions. The discussion of impacts to ecological functions can be found in the I-405 Corridor Program Draft Wetlands and Fish and Aquatic Habitat Expertise Reports (DEA, 2001). In the event that flooding occurs, equipment would need to be moved out of the floodplain.

5.5.2 Operational Impacts

No operational impacts are anticipated, since the roadway can be designed to avoid the floodway and structures would be designed to result in a zero increase in flood elevation.

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Alternative Three Projects with Floodplains
Figure No. 5.4

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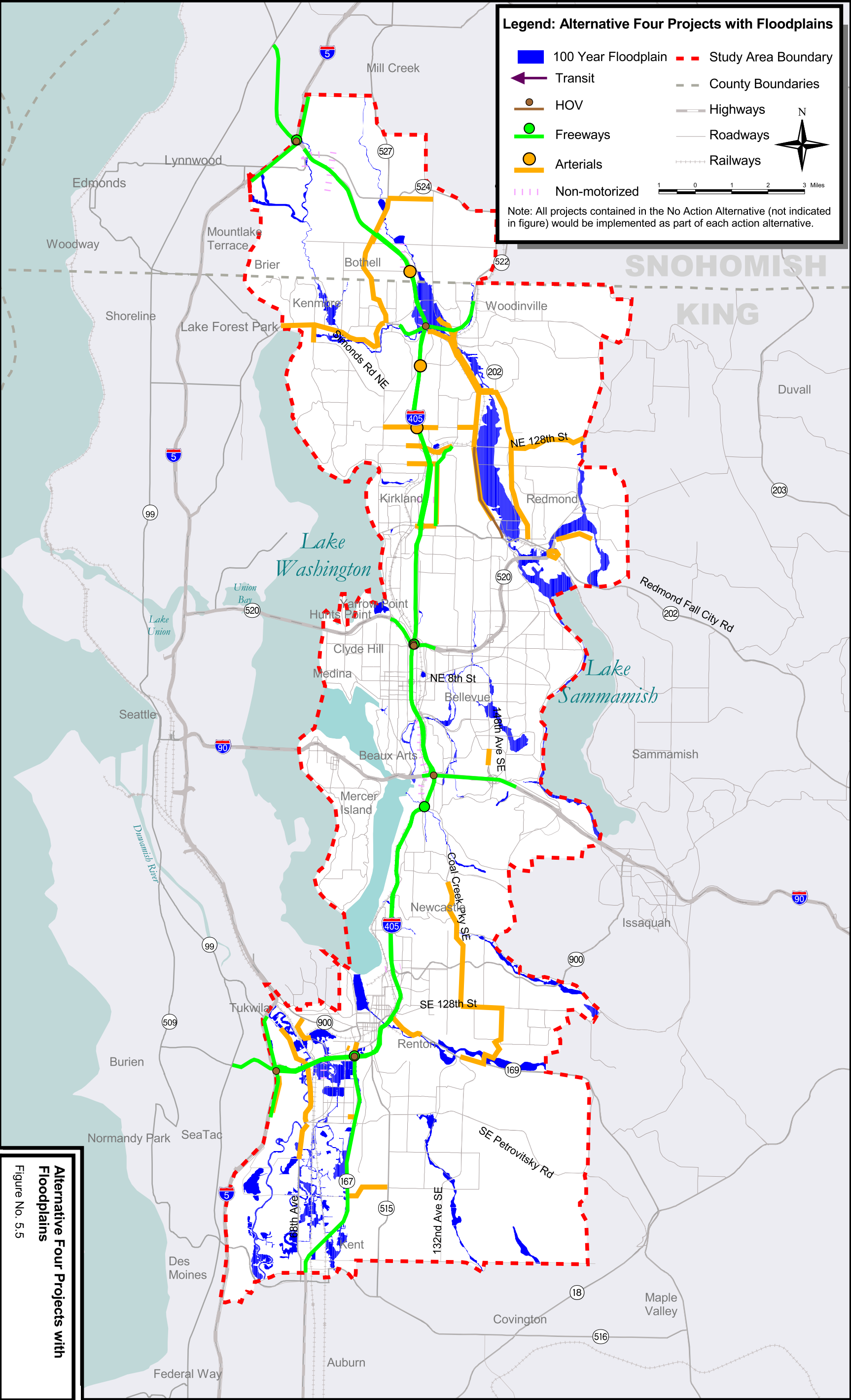
Table 5.5: Floodplains Potentially Impacted by Alternative 4

Jurisdiction		Actions	Floodplain Analysis
10. Basic I-405 Improvement Project			
Renton	R.BI.1	SR 167 Interchange – Direct Connection with auxiliary lane SB SR 169 to SR 167	Cedar River floodplain and floodway crossed where floodway is 200 feet wide. The existing bridge can be widened to span the floodway and avoid impacts. Rolling Hills Creek floodplain is adjacent to I-405 for 1,200 feet NE of SR 167. New storage can be added in the design to replace any lost floodplain storage if needed.
Bellevue	R.BI.4	I-90/Coal Creek Interchange	Coal Creek floodway is 50 feet wide. The floodway is crossed and approximately 200 feet of the floodway and floodplain is adjacent to I-405. The floodway can be spanned by extension of the existing culvert and the floodplain can be spanned as part of interchange design to avoid impacts.
Renton	R.BI.7	Kennydale Hill climbing lane – SR 900 to 44 th – NB 900 to 30 th , SB 44 th – 30 th	May Creek floodplain is crossed by I-405 where it is 100 feet wide. The bridge can be widened to avoid impacts.
Bellevue	R.BI.8	I-90 to Bellevue SB HOV direct connection to I-90 west	Mercer Creek floodplain is 100 feet wide where it is crossed by I-405. The existing culvert can be lengthened to avoid impacts or replaced with a larger culvert if necessary for flood flow or fish passage.
13. Express Lanes – 2 lanes each direction between major interchanges			
Tukwila & Renton	R.TC-20	Add Express lanes in each direction – SR 5 – SR 167	Green River floodplain and floodway are 250 feet wide where I-405 crosses. The existing bridge over the floodway can be widened to avoid impacts. Springbrook Creek floodplain is crossed by I-405 and is also adjacent for approximately 2,500 feet. The existing bridge over the floodway can be widened to avoid impacts and new storage to replace lost flood fringe storage can be included in design.
Renton	R.TC-21	Add Express lanes in each direction – SR 167 to SR 900/North Renton Interchange	Rolling Hills Creek floodplain is adjacent to I-405 for 1,200 feet. The floodway impacts can be minimized with retaining walls and new storage to replace lost flood fringe storage can be included in design. Cedar River floodplain and floodway are 200 feet wide where they are crossed by I-405 and existing bridges can be widened to avoid impacts.
Renton, Newcastle & Bellevue	R.TC-22	Add Express lanes in each direction – SR 900/North Renton Interchange to SR 90	May Creek floodplain is crossed by I-405 where it is 100 feet wide. The bridge can be widened to avoid impacts. Coal Creek floodway is 50 feet wide. The floodway is crossed and approximately 200 feet of the floodway and floodplain is adjacent to I-405. The floodway can be spanned by extension of the existing culvert and the floodplain can be spanned as part of interchange design to avoid impacts.
Bellevue	R.TC-23	Add Express lanes in each direction – SR 90 to SR 520	Mercer Creek floodplain is 100 feet wide where it is crossed by I-405. The existing culvert can be lengthened if there are no impacts to the flood elevation or replaced with a larger culvert if necessary for flood flow or fish passage.
Kirkland Bothell	R.TC-26	Add Express lanes in each direction – NE 124 th to SR 522	Samammish River floodplain is crossed by I-405 where it is 100 feet wide. The bridge can be widened to avoid impacts.

Jurisdiction		Actions	Floodplain Analysis
Bothell	R.TC-27	Add Express lanes in each direction – SR 522 to SR 527	North Creek is crossed where the floodway (and floodplain) is 100 feet wide; impacts can be avoided by spanning the floodplain. The North Creek floodplain is adjacent for 2000 feet. Fills will be mitigated with retaining walls or replacement floodplain storage.
Sno. Co.	R.TC-29	Add Express lanes in each direction – SR 527 to SR 5 Swamp Creek	Swamp Creek is crossed where the floodway (and floodplain) is 100 feet wide; impacts can be avoided by spanning the floodplain.
Renton	R.TC-28	Add Express lanes – on SR 167 north of 180 th up to I-405	Springbrook Creek floodplain is adjacent to SR 167 for approximately 2,500 feet. New storage can be added to replace any lost floodplain storage if needed.
16. Connecting Freeway Capacity (Matched to fit I-405 Improvements)			
Bothell, Woodinville	R.CF.5	SR 522 Bothell to NE 195th	Sammamish River floodway and floodplain is 100 feet wide. It can be spanned by widening the existing bridge to avoid impacts. North Creek floodway and floodplain is 100 feet wide and could be spanned by widening the existing bridge to avoid impacts. Bear Creek floodway and floodplain is 50 feet wide. The existing culvert can be lengthened if there are no impacts to the flood elevation or replaced with a larger culvert if necessary for flood flow or fish passage.
10A. One additional GP lane in each direction			
Tukwila & Renton	R.TC-9	One additional GP lane in each direction – SR 5 – SR 167	Green River floodplain and floodway are 250 feet wide where I-405 crosses. The existing bridge over the floodway can be widened to avoid impacts. Springbrook Creek floodplain is crossed by I-405 and is also adjacent for approximately 2,500 feet. The existing bridge over the floodway can be widened to avoid impacts and new storage to replace lost flood fringe storage can be included in design.
Renton	R.TC-10	One additional GP lane in each direction – SR 167 to SR 900/North Renton Interchange	Rolling Hills Creek floodplain is adjacent to I-405 for 1,200 feet. The floodway impacts can be minimized with retaining walls and new storage to replace lost flood fringe storage can be included in design. Cedar River floodplain and floodway are 200 feet wide where they are crossed by I-405 and existing bridges can be widened to avoid impacts.
Renton, Newcastle & Bellevue	R.TC-11	One additional GP lane in each direction –SR 900/North Renton Interchange to SR 90	May Creek floodplain is crossed by I-405 where it is 100 feet wide. The bridge can be widened to avoid impacts. Coal Creek floodway is 50 feet wide. The floodway is crossed and approximately 200 feet of the floodway and floodplain is adjacent to I-405. The floodway can be spanned by extension of the existing culvert and the floodplain can be spanned as part of interchange design to avoid impacts.
Bellevue	R.TC-12	One additional GP lane in each direction –SR 90 to SR 520	Mercer Creek floodplain is 100 feet wide where it is crossed by I-405. The existing culvert can be lengthened if there are no impacts to the flood elevation or replaced with a larger culvert if necessary for flood flow or fish passage.
Kirkland Bothell	R.TC-15	One additional GP lane in each direction – NE 124 th to SR 522	Samammish River floodplain is crossed by I-405 where it is 100 feet wide. The bridge can be widened to avoid impacts.

Jurisdiction		Actions	Floodplain Analysis
Bothell	R.TC-16	One additional GP lane in each direction – SR 522 to SR 527	North Creek is crossed where the floodway (and floodplain) is 100 feet wide; impacts can be avoided by spanning the floodplain. The North Creek floodplain is adjacent for 2000 feet. Fills will be mitigated with retaining walls or replacement floodplain storage.
Sno. Co.	R.TC-17	One additional GP lane in each direction –SR 527 to SR 5 Swamp Creek	Swamp Creek is crossed where the floodway (and floodplain) is 100 feet wide; impacts can be avoided by spanning the floodplain.
18. Arterial Capacity Actions			
Renton	R.AC-3	138th Avenue SE (SR 169 to NE 4th Street) - widen to 4/5 lanes	Cedar River is crossed where the floodway is 300 feet wide. The existing bridge can be replaced to span the floodplain.
Tukwila	R.AC-36	SR 181 – 144 th to Strander Blvd.	Green River floodway crossed where it is 100 feet wide. The existing bridge will be widened. Green River floodplain and floodway is adjacent to SR 181 for approximately 900 feet. The design will avoid any filling in the floodplain by constructing walls if necessary.
19. Arterial Interchange Improvements (Matched to fit I-405 Improvements)			
Bothell	R.IC-11	SR 527 – 228 th to SR 524	North Creek is crossed where the floodway (and floodplain) is 100 feet wide. The existing culvert can be lengthened if there are no impacts to the flood elevation or replaced with a larger culvert if necessary for flood flow or fish passage.
7. HOV Interchange Ramps (Direct Access)			
Renton	R.HOV-26	SR 167 Interchange Freeway to Freeway HOV ramps	Patches of Springbrook Creek Floodplain (flood fringe) are near the I-405/SR 167 interchange. As part of design, any lost storage would need to be replaced.
Bothell	R.HOV-29	SR 522 Freeway to Freeway HOV ramps	North Creek abuts I-405 and SR 522. Widening would require that design include additional floodplain storage be created to offset storage lost by filling.
Pedestrian and Bicycle Facilities (P&B)			
21. I-405 Crossings			
Bothell	NM.CR-2	Fitzgerald Road/27 th Avenue – crossing I-405 from 228 th Street SE to 240 th Street SE -- add pedestrian/bike facility	North Creek is crossed where the floodway is 100 feet wide The existing culvert can be lengthened if there are no impacts to the flood elevation or replaced with a larger culvert if necessary for flood flow or fish passage. Approximately 100 feet of floodplain is adjacent to the project and retaining walls may be required to avoid loss of storage.
Bothell	NM.CR-7	Connection between Sammamish River Trail and North Creek Trail – between SR-522 and NE 195th St. - Add pedestrian/bike overcrossing of I-405	The North Creek flood fringe for the 500-year flood is adjacent to I-405. A crossing of I-405 and an adjacent pathway can be developed without impacting the 100-year floodplain. Sammamish River floodplain crossed where it is 50' wide. A ground level trail would not impact floodplain functions.

Jurisdiction	Actions	Floodplain Analysis
21. Pedestrian/Bicycle Connections		
Renton/ NM.P&B-18 Tukwila	I-405/1-5 - via or around I-405/ I-5 interchange - Add pedestrian/bike facilities	The Cedar River, Green River, and Springbrook Creek floodplains are crossed by this project. A ground level trail would not impact floodplain functions.
17. Planned Arterial Projects		
Bothell R.PA-3	SR 522 Multimodal Corridor Project-- Widen SR-522 mostly within existing ROW to provide transit lanes, safety improvements, consolidated driveways & left turn lanes; and sidewalks. (ETP R-107)	Swamp Creek crossed where floodplain is 75 feet wide. Floodway spanned. Widening can take place without impact if the floodplain is spanned.
Redmond R.PA-17	Bear Creek Parkway - Construct new 162nd Ave NE and new 72nd Street. Widen Bear Creek Parkway	Bear Creek floodway and floodplain is adjacent for approximately 1700 feet. New storage can be added to replace any lost floodplain storage if needed.
Redmond R.PA-18	Union Hill Road (Avondale Road to 196 th Avenue NE) – widen to 4/5 lanes with bike facilities (ETP R-27)	Bear Creek is crossed where the floodway is 100 feet wide. The existing culvert can be lengthened or replaced with a bridge if required for fish passage to span the floodway. Bear Creek floodplain is adjacent for approximately 600 feet. New storage can be added to replace any lost floodplain storage if needed. Evans Creek is crossed where the floodway is 200 feet wide. The existing culvert can be lengthened or replaced with a bridge if required for fish passage to span the floodway.
Renton R.PA-20	Oaksdale Avenue SW (Monster Road to SR 900) Replace Monster Road Bridge; widen to 4/5 lanes +Bike Lanes +CGS (ETP R-35)	Black River is crossed where the floodplain is 50 feet wide. The existing bridge can be widened to span the floodplain.
Woodinville R.PA-25 & R.AC.30	SR 522 Interchange Package (SR 522/SR 202 & SR 522/195 th Street) – Access improvements and new freeway ramps (WTP R-53) (see R.AC-30)	Sammamish River floodplain is 100 feet wide. The existing bridge can be widened to span the floodplain. North Creek is crossed where the floodway is 100 feet wide; it can be spanned to avoid impacts. The North Creek floodplain is adjacent for 2000 feet and the Sammamish River floodplain is adjacent for 500 feet. Fills will be mitigated with retaining walls or replacement floodplain storage.
Woodinville R.AC-3	SR 522 Interchange Package (SR 522/SR 202 & SR 522/195 th Street) – Access improvements and new freeway ramps (ETP R-53) (see R.AC-30)	Cedar River is crossed where the floodway is 300 feet wide; it can be spanned to avoid impacts. Approximately 25,000 square feet of flood fringe storage area may need to be replaced during design.



Alternative Four Projects with Floodplains
Figure No. 5.5

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5.6 Secondary Impacts

Secondary impacts are reasonably foreseeable effects of an action that occur later in time or are further removed in distance from the direct effects of the proposal. Generally, these effects are induced by the initial programmatic action. Programmatic secondary impacts are expected to be limited and unlikely for the I-405 Corridor Program for several reasons:

- All of the I-405 Corridor Program action alternatives are generally compatible with existing regional and local land use plans that have already addressed growth.
- A similar level of projected growth is expected to occur in the region, with or without the action alternatives.
- Transportation projects, similar to I-405, are frequently built in response to population and/or employment growth.
- The I-405 Corridor Program study area is experiencing a high rate of population growth and land development that is increasing travel demand and congestion.

Secondary effects may be more detectable during project-level environmental analysis. Therefore, the potential for secondary effects will be analyzed in the future project-level environmental analysis, documentation, and review.

5.7 Mitigation Measures

The best type of mitigation is to limit the amount of fill in floodplains. This can be accomplished by building walls or steep engineered fill slopes adjacent to the floodplain rather than standard fill slopes. When crossing a river, a wide bridge can be used to span the entire floodway. For a wide floodplain, the effect of the fill on the flood elevation is analyzed. If there is a detrimental effect, a causeway-type bridge or overflow bridges are built. If floodplain storage is lost, an equal volume is replaced in the same floodplain by excavation, demolition of a structure, or transfer of density rights. The loss of ecological functions is usually accompanied by a loss of wetland area and would be mitigated by wetland enhancement or replacement. Other possible mitigation measures include widening existing bridges, increasing existing culvert sizes, or replacing existing culverts with bridges. Mitigation anywhere along the stream system, including purchase of development rights, can reduce flood flows and limit the rise in the floodplain.

To determine the impact area, the base flood elevation from the FIRM map is drawn on the proposed cross section of the roadway. If any flood storage volume has been removed by the proposed cross section, that volume would require mitigation. In most cases where one lane is being added, this type of impact can be mitigated by constructing a retaining wall to replace the existing fill slope. Most of the roadways in the project area currently have fill slopes rather than retaining walls adjacent to the large floodplains. If more than one lane is being added, it is likely that the proposed cross section will be wider than the existing fill slope, and additional mitigation beyond retaining walls is expected. This is most likely along I-405 in the Springbrook Creek and North Creek floodplains and along arterials in the Samammish River, North Creek and Bear Creek floodplains. In these cases, the FIRM map and topographic surveys would be reviewed for areas that would be candidates for grading and possible demolition of existing structures. This could be combined with a wetland mitigation site if the project impacts wetlands.

If the roadway crosses a floodway, an HEC-RAS model of the existing river or creek channel, the culverts, and the bridges is developed. In most of the proposed projects, the roadway is being widened along with the existing culvert or bridge, rather than creating a new crossing. In all cases the adequacy of the widened structure to carry the flood flow will be evaluated. If the structure is not adequately sized to carry the flood flow without raising the upstream flood elevation by less than 0.01 foot, a replacement bridge or culvert will be reviewed. All existing structures and especially culverts will be evaluated concurrently for fish passage. Rolling Hills Creek, Coal Creek, Mercer Creek, North Creek, and Swamp Creek all flow through existing culverts on I-405. Many other project arterials also cross these and other creeks with culverts.

All stream crossing widenings or new crossings will be designed in accordance with WSDOT Hydraulics Manual for flow passage and the WDFW Fish Passage Design at Road Culverts for fish passage. The design and construction plans and specifications will be prepared in conjunction with biologists to reduce impacts on the natural stream bed and will mitigate impacts by placing gravel in the culverts, planting riparian trees and using other natural features such as log weirs, boulders, and other types of woody debris. Construction will be done during low flow periods that are least likely to harm fish and other wildlife in accordance with WDFW requirements.

Maintenance of stream crossing structures will be reduced by selecting materials with long lives and low maintenance requirements and by selecting larger sizes of culverts or bridges with more clearance. These large sizes will have less tendency to plug with floating debris or sediment deposition. When maintenance is required, it will be done during low flow with the least obtrusive processes possible.

6. COMPARISON OF ALTERNATIVES

Table 6.1: Summary of Potential Impacts to Floodplains in the Study Area

Alternative	Floodplains Affected	Floodplain Crossings	Potential Impact Length	Mitigation
No Action Alternative	6 project affect 5 floodplains	5	13,950	Walls, bridges, storage, overflow channel
1 ^a	17 projects affect 14 floodplains	17	17,700	Walls, bridges, storage
2 ^a	31 projects affect 14 floodplains	36	30,325	Walls, bridges, storage
3 ^a	30 projects affect 14 floodplains	35	30,425	Walls, bridges, storage
4 ^a	30 projects affect 14 floodplains	36	25,225	Walls, bridges, storage

^a The impacts in these alternatives are in addition to impacts from the No Action Alternative.

The No Action Alternative has the least potential impact on floodplains due to the lowest number of projects, the least floodplains impacted, the least floodplains crossed, and the lowest potential length of impact. Alternatives 2, 3, and 4 have similar numbers of projects impacting floodplains, crossing floodplains and floodways, and potential length of impact. Of these projects, Alternative 4 probably has the most impact due to the 3 lanes of widening proposed on I-405 that will exceed the current fill slopes and require fill and mitigation storage in the Springbrook Creek and North Creek floodplains at a minimum.

Under each alternative, conventional design measures, including spanning of the floodway and replacement of floodplain storage areas, can be used to avoid or mitigate impacts. As a consequence, the net loss of floodplain storage is expected to have no change. Alternatives 2 through 4 will cause more loss of floodplain ecological functions. These are discussed in I-405 Corridor Program Draft Wetlands and Fish and Aquatic Habitat Expertise Reports (DEA, 2001).

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7. REFERENCES

Federal Emergency Management Agency. National Flood Insurance Program. Flood Insurance Rate Maps (FIRM) for King County, Washington, and Incorporated Areas. Maps dated May 16, 1995, and November 8, 1999.

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Parsons Brinckerhoff. Revised August 2001. *I-405 Corridor Program Draft Noise Expertise Report.*

8. GLOSSARY

Flood fringe - In FEMA it is that portion of the floodplain outside the floodway that is inundated by flood waters in which encroachment is permissible. In King County it is the area outside the zero-rise floodway that is covered by flood waters during the 100-year flood. It is the area generally associated with standing water, rather than rapidly flowing water.

Floodplains - lowlands that are relatively flat that are subject to flooding in any given year.

FEMA Floodway - the channel of a river or other watercourse and the adjacent land areas that must be unconfined or unobstructed either vertically or horizontally to provide for the discharge of the base year flood (usually 100-year).

100-year flood - the flood having a one percent chance of being equaled or exceeded in magnitude in any given year. Contrary to popular belief, it is not a flood occurring once every 100 years.

100-year floodplain - the area adjacent to a stream or lake which is subjected to inundation by waters having a flood probability of exceedence of one percent in any given year, as determined by standard statistical and hydrologic methods.

Zero-rise Floodway - the channel of a river or other watercourse and that portion of the adjoining floodplain necessary to discharge the 100-year flood flow without increasing the 100-year flood elevation by more than 0.01 feet. The boundaries of the floodplains as shown on the FIRM are considered the boundaries of the zero-rise floodway unless otherwise delineated by a special study.

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APPENDIX A
Major Elements of Alternatives

Appendix A

I-405 CORRIDOR PROGRAM

MAJOR ELEMENTS OF ALTERNATIVES

1. TRANSPORTATION DEMAND MANAGEMENT

TDM Package Core Assumptions

- Existing TDM programs will continue (public & private sector)
- Existing public TDM programs will be expanded to meet new market demand
- Implementation of trip reduction targets will be supported by new interlocal or sub-regional agreements
- Strategies are flexible, monitored and adjusted as needed over time (includes tracking trends for Internet, e-commerce)
- Funding is provided for demonstration projects, plus some ongoing funding for new TDM strategies found effective

Focus of TDM Package

SOV and other trip reduction through the use of:

- Incentives
- Increasing access to alternative modes
- Public information, education and promotion
- Land use strategies

Strategies in the TDM Package
<u>VANPOOLING</u> <ul style="list-style-type: none">• Maximize vanpooling in the corridor (minimum of a five-fold increase)<ul style="list-style-type: none">* Intensive marketing of vanpooling, including start-up subsidies* Use of new “value-added” incentives (e.g., frequent flyer miles for vanpoolers)* Creation of a revolving no-interest loan fund for purchasing vans* 50% fare subsidy* Provide sufficient infrastructure (e.g., small park & ride lots)* Owner-operated vanpool promotion
<u>PUBLIC INFORMATION, EDUCATION & PROMOTION PROGRAMS</u> <ul style="list-style-type: none">• Establish ongoing public education and awareness program specific to the corridor (focus on issues and transportation alternatives)• Provide traveler information system(s), including interactive ridematch and transit information• Provide personalized trip planning assistance, including for transit

Strategies in the TDM Package

EMPLOYER-BASED PROGRAMS

- Increase work choices
 - Telecommuting, flextime, compressed work schedules, multiple shifts
 - Proximate commuting (assigning employees to work sites close to home)
 - Incentives to employers to offer work choices (e.g., tax credits)
- For current commuter trip reduction program – new incentives and resources to help CTR-affected employers obtain CTR goals (e.g., grants, tax credits, staff support)
- Expanded CTR-like program aimed at smaller employers plus those larger ones not affected by CTR laws (non-regulatory, voluntary based)
- Support development and core operations of transportation management associations (TMA)
- Parking cash-out program incentives and financing

LAND USE AS TDM

Compact, mixed-use, non-motorized and transit friendly (re)development in target areas (urban centers, suburban clusters, key arterials, transit station areas, transit centers, park-and-ride lots)

- Transit-oriented development (TOD)
- Code changes, streamlining processes, local connectivity retrofitting projects to support (re)development
- Programs (code assistance, design review support) to help jurisdictions and developers implement compact (re)development
- New parking management programs

OTHER MISCELLANEOUS TDM PROGRAMS

Innovative transit and vanpool fare media, incentives, demonstrations, matching funds, etc. [e.g., area-wide “Smart Card” (FlexPass) programs for Eastgate, downtown Bellevue, north Renton industrial area, Bothell business parks, Redmond, downtown Kirkland, Tukwila]

- Non-commute trips TDM programs (research and demonstrations)
- Other miscellaneous incentives (local and state tax credit programs, developer incentives)

2. EXPANDED TDM PACKAGE

Overview

This major element will include the range of regional pricing actions being evaluated by the PSRC. The potential impacts of the following actions will be examined in the context of the I-405 Corridor:

- ◆ Region-wide congestion pricing (RCP);
- ◆ Fuel taxes (revenue = RCP);
- ◆ Fuel taxes (revenue = 50% RCP);

- ◆ Mileage charge (revenue = RCP);
- ◆ Parking charges;
- ◆ High occupancy toll lanes.

2. NEW TRANSIT EXPANSION BY 50% WITHIN STUDY AREA

Transit service levels would be increased by 25% compared to the current King County 6-year plan, assumed to be in place by 2007.

Transit service levels would be increased by 50% compared to the current King County 6-year plan, assumed to be in place by 2007.

3. DOUBLE TRANSIT SERVICE WITHIN STUDY AREA

Overview

Transit service levels would be doubled compared to the current King County 6-year plan, assumed to be in place by 2007. The effects of I-695 on short-term transit service have not been assumed. Transit service coverage and design would also be revised to more closely match travel patterns within the study area. These revisions could include more center-to-center movements, connections between neighborhoods and centers, and development of an appropriate 'grid' transit system within the study area.

4. PHYSICALLY SEPARATED HIGH-CAPACITY TRANSIT (HCT)

Description

A high-capacity transit solution would be designed for the I-405 corridor. The exact technology of this solution would be determined in later studies, but could include busway, light rail, monorail, or similar mode that could operate at speeds of up to 70 mph. The HCT alignment would generally follow the I-405, SR 520 and I-90 freeway corridors in existing freeway, arterial, or railroad right-of-way. The key characteristic of this solution would be that it would have a dedicated alignment, removing it from congestion-induced delays. Bus service would be reconfigured to provide maximum accessibility to the HCT system.

Alternatives 1 and 2 assume a full-scale HCT within the corridor, likely using some form of rail technology. Alternative 3 assumes a bus rapid transit (BRT) concept, building on the existing freeway HOV system.

High Capacity Transit		
Jurisdiction	Project ID*	Projects
Tukwila & Renton	T.HCT-1	HCT- SeaTac to Renton CBD
Renton	T.HCT-2	HCT-Renton CBD to NE 44 th (Port Quendall)
Renton, Newcastle & Bellevue	T.HCT-3	HCT- NE 44 th (Port Quendall) to Factoria
Bell & Issaquah	T.HCT-4	HCT – Factoria to Issaquah

High Capacity Transit		
Bellevue	T.HCT-5	HCT – Factoria to Downtown Bellevue
Bell & Redmond	T.HCT-6	HCT – Bellevue to Redmond
Bell & Kirkland	T.HCT-7	HCT – Bellevue to Totem Lake
Kirk, King Co. & Woodinville	T.HCT-8	HCT – Totem Lake to Bothell
Bothell & Sno Co.	T.HCT-9	HCT – Bothell to Lynnwood

High Capacity Transit Stations	
Sea-Tac	Sea-Tac
Tukwila	Southcenter
Tukwila & Renton	Tukwila (Longacres)
Renton	Downtown Renton
Renton	North Renton
Renton	Port Quendall
Bellevue	Factoria
Bellevue	Bellevue Transit Center
Bellevue	Bellevue Library
Bell & Kirk	SR 520/Northup Way
Kirkland	Downtown Kirkland (NE 85 th Street)
Kirkland	Totem Lake
Woodinville	NE 145 th Street
Woodinville	Woodinville
Bothell	NE 195 th Street
Bothell	Canyon Park
Snohomish County	164 th Street SW (Ash Way)
Bellevue	Eastgate
Bellevue	Lakemont
Issaquah	Issaquah
Bellevue	132 nd Avenue NE
Bellevue	148 th Avenue NE
Redmond	Overlake (NE 40 th Street)
Redmond	Redmond/Town Center
Redmond	Bear Creek
Mercer Island	Mercer Island

6. ADD ARTERIAL HOV AND TRANSIT PRIORITY

Overview

Create lanes, intersection queue jumps and signals that provide priority to HOVs and transit on major arterials in the study area.

Arterial HOV		
Bellevue	R.HOV-36	Coal Creek Pkwy I-405 to Forest Drive
Bellevue	R.HOV-37	NE 8th Street I-405 to 120th Ave NE
Kirkland, Redmond	R.HOV-38	NE 85th St Kirkland Way to 148th Ave NE
Kirkland	R.HOV-39	NE 116th 98th Ave NE to 124th Ave NE
Kirkland	R.HOV-40	NE 124th 100th Ave NE to 132 Ave NE
Bothell	R.HOV-41	SR 527 From SE 228th St to SR 524
Renton	R.HOV-43	SR 169 - SR 405 to Riverview Park vicinity - HOV/Transit Preferential treatment.
Renton	R.HOV-44	SW 27th St Corridor in Renton - Oaksdale Ave to SR 167
Redmond	R.HOV-47	Avondale Rd from Novelty Hill Road to Avondale Way Construct SB HOV lane
Renton, King Co	R.HOV-48	SW 43 St (SR 167 to 140 Ave SE)
Renton	R.HOV-49	Logan Ave N / N 6 St (S 3 St to Park Dr)
Renton	R.HOV-51	Park Dr - Sunset Blvd (Garden Ave to Duvall Ave NE)
Kenmore	R.HOV-53	68 Ave NE (Smds Rd to SR 522) - Construct NB HOV lane
Redmond	R.HOV-55	Willows Rd (Redmond Wy to NE 124 St)
Kirkland, Bell	R.HOV-56	Lake Wa Blvd (SR 520 to Yarrow Bay) - SB HOV lane
Kirkland	R.HOV-57	NE 68 St/NE 72 Pl (I-4405 Vicinity) – Que Bypass
Bellevue	R.HOV-60	Bellevue Way - I-90 to South Bellevue Park and Ride

7. HOV EXPRESS ON I-405 WITH DIRECT ACCESS RAMPS

Overview

Complete the series of ramps connecting arterials and freeways directly to HOV lanes on I-405. This allows carpools, vanpools and buses to use the HOV lanes without weaving across other traffic. HOV direct access ramps have already been designed by Sound Transit in downtown Bellevue and Kirkland, and design studies are starting for HOV ramps in downtown Renton.

HOV Interchange Ramps (Direct Access)		
Tukwila	R.HOV-25	SR 5 I/C @ Tukwila Fwy to Fwy HOV ramps,
Renton	R.HOV-26	SR 167 I/C Fwy to Fwy HOV ramps,
Bellevue	R.HOV-27	SR 90 I/C Fwy to Fwy HOV ramps,
Bellevue	R.HOV-28	SR 520 Fwy to Fwy HOV ramps,
Bothell	R.HOV-29	SR 522 Fwy to Fwy HOV Ramps
Sno. Co.	R.HOV-30	SR 5 I/C @ Swamp Creek Fwy HOV ramps.
Kirkland	R.HOV-61	NE 85th
ST	R.HOV-101	I-405 @ Lind – HOV Direct Access
Newcastle	R:HOV-65	112th St SE (In-Line Station)

Committed HOV Projects		
Bellevue	HOV-01	I-405 at NE 4th/6th/8th (Bellevue)/Construct new HOV direct access at NE 6th, Improve arterial capacity at NE 4th/8th interchanges
Bellevue	HOV-02	I-90 (Eastgate)/New I-90 HOV direct access connection to P&R
Renton	R.HOV-32	Between Sunset and SR-900 /Park Ave interchange in Renton
ST	R:HOV-66	I-405 at 128th St/HOV direct access improvements
Renton	R.HOV-33	NE 44th I/C - HOV Direct Access and Arterial Improvements(Assumes Port Quendall)
WSDOT	HOV-14	I-405 (I-5 Swamp Creek to SR 527)/Construct NB and SB HOV lanes total 6 lanes
Bothell	R.HOV-62	SR 522 Campus Access
Bothell	R.HOV-63	SR 527 Flyer Stop
ST	HOV-102	Woodinville Arterial Enhancements/HOV arterial enhancements

8. ADD PARK-AND-RIDE CAPACITY TO MEET DEMAND

Overview

Provides additional park-and-ride capacity at existing locations and creates selected new lots based on forecasted transit and carpool demand. The locations initially identified for expansion are listed below. These locations will be refined during the evaluation process.

Park and Rides		
Renton	T.PR-3	Renton East Highlands new Park and Ride
Tukwila & Renton	T.PR-6	Tukwila Commuter Rail (Longacres)
King County	T.PR-5	140th Ave SE and Petrovitsky Rd Vicinity
King County	T.PR-8	SR 169 and 140th WY SE
King County	T.PR-9	Petrovitsky Rd and 157th Ave SE
King County	T.PR-10	140th Ave SE and SE 192nd
King County	T.PR-11	SR 515 and SE 208th
Kent & Renton	T.PR-12	SR 167 and SW 43rd
Kent & Renton	T.PR-13	SR 167 and 84th Ave
Redmond	T.PR-17	Willows Rd @ NE 100th
Redmond	T.PR-18	SR 202 @ NE 100th
Bellevue & Kirkland	T.PR-20	South Kirkland
Redmond	T.PR-21	Overlake
Bellevue	T.PR-22	South Bellevue
Bellevue	T.PR-23	Newport (112 th Ave. SE)
King County	T.PR-24	NE 160th/Brickyard Rd
Bothell	T.PR-25	Canyon Park (I-405 and SR 527)
Tukwila	T.PR-30	Tukwila
Kirkland	T.PR-31	Houghton
Kirkland	T.PR-32	Kingsgate
Medina	T.PR-33	Evergreen Point
Bellevue	T.PR-34	Wilburton
King County	T.PR-35	Lakemont
Redmond	T.PR-36	Redmond
Redmond	T.PR-37	Bear Creek
Bothell	T.PR-38	Bothell
Kenmore	T.PR-39	Northshore
Kenmore	T.PR-40	Kenmore
Woodinville	T.PR-41	Woodinville
Mercer Island	T.PR-42	Mercer Island
Bellevue	T.PR-43	Eastgate

9. ADD TRANSIT CENTER CAPACITY TO MEET DEMAND

Overview

Expand existing transit centers and create new transit centers to accommodate increased transit service. The specific locations for expansion and new centers will be identified during the evaluation process. Alternatives 1, 2, and 3 will require transit center capacity to accommodate a significant increase in transit service, at designated HCT stations, and at feeder bus connections. A partial listing is below.

Transit Center Capacity		
Renton	T.TC-6	Downtown Renton
Bellevue	T.TC-8	Downtown Bellevue
Redmond	T.TC-9	Overlake
Redmond	T.TC-10	Redmond/Town Center
Kirkland	T.TC-12	Downtown Kirkland
Kirkland	T.TC-14	Totem Lake

10. BASIC I-405 IMPROVEMENTS

Overview

This major element fixes existing bottlenecks and locations with safety deficiencies along I-405.

Basic I-405 Improvement Projects		
Jurisdiction	Project ID*	Projects
Renton	R.BI.1	SR 167 Interchange - Direct Connection with auxiliary lane SB SR 169 to SR 167
Kirkland	R.BI.2	Continue NB climbing Lane from NE 70th to NE 85th and continue as auxiliary Lane to NE 116th
Kirkland	R.BI.3	SB auxiliary Lane NE 124th to NE 85th
Bellevue	R.BI.4	I-90 / Coal Creek Interchange
Bothell, King Co, Kirkland	R.BI.5	SB SR 522 to 124th continue climbing lane as an auxiliary lane
Bothell	R.BI.6	NB auxiliary lane SR 522 to SR 527
Renton	R.BI.7	Kennydale Hill climbing lane - SR 900 to 44th - NB 900 to 30th, SB 44th - 30th
Bellevue	R.BI.8	I-90 to Bellevue SB HOV direct connection to I-90 west
Bellevue	R.BI.9	NB auxiliary lane I-90 to NE 8th
Bellevue	R.BI.10	Increase SR 405 to Eastbound SR 520 Ramp capacity
Renton	R.BI.14	NB Auxiliary Lane I-5 to SR 167
Various	R.FR-24	Improve interchange geometrics at all major truck routes (WB-20 Design Criteria)
WSDOT	R-55	I-405/SR 167 Interchange/Construct new southbound I-405-to-southbound SR 167 ramp modification.

11. ADD 2 GENERAL PURPOSE LANES EACH DIRECTION ON I-405

Add up to 2 general purpose lanes to I-405 through widening of the existing freeway. A design option is to create collector-distributor lanes in selected corridor segments (See Element 12).

12. PROVIDE COLLECTOR DISTRIBUTOR LANES ON I-405

Overview

Collector- Distributor lanes provide more time for traffic to safely enter or exit from roadway by providing lanes removed from general travel. This is being considered as a design option to handle the addition of one or two general purpose lanes in each direction along I-405 in certain sections. Collector-Distributor lanes have been included as parts of other elements.

13. ADD TWO EXPRESS LANES EACH DIRECTION ON I-405

Overview

This element consists of a four-lane express facility designed to operate with limited interchanges along the length of I-405. The express lanes would be physically separated from the rest of I-405 through the use of barriers. Certain segments could operate within the median of I-405, while other segments would need to be elevated, in tunnel, or on separate alignments.

The express lanes could operate as a general purpose facility or as a managed facility, such as a 'High Occupancy Toll (i.e. HOT) lane. Certain users could be allowed to use the express lanes for free, while other users could be allowed to 'buy-in' to available capacity. The capacity would be priced depending upon demand.

Express Lanes – 2 Lanes each Direction between Major Interchanges		
Jurisdiction	Project ID	Projects
Tukwila, Renton	R.TC-20	Add Express lanes - SR 5 Tukwila to SR 167
Renton	R.TC-21	Add Express lanes - SR 167 to SR 900 north Renton I/C
Renton, Newcastle, Bellevue	R.TC-22	Add Express lanes -SR 900 North Renton I/C to SR 90
Bellevue	R.TC-23	Add Express lanes - SR 90 to SR 520
Bellevue, Kirkland	R.TC-24	Add Express lanes - SR 520 to NE 70th
Kirkland	R.TC-25	Add Express lanes - NE 70th to NE 124th
Kirkland, King County, Bothell	R.TC-26	Add Express lanes - NE 124th to SR 522
Bothell	R.TC-27	Add Express lanes - SR 522 to SR 527
Bothell and Snohomish Co.	R.TC-29	SR 527 to vicinity of Damson Road
Renton	R.TC-28	Add Express lanes- on SR 167 north of 180th up to I-405

Express Lanes –Access Locations		
Snohomish Co	R.TC-30	Northern end to Express lanes - Between SR 527 and I-5
King Co/Kirkland	R.TC-31	Slip Ramp- South of NE 160th St
Kirkland	R.TC-32	Slip Ramp- South of NE 70th St
Bellevue, Newcastle	R.TC-33	Slip Ramp- South of Coal Creek Pkwy
Renton	R.TC-34	Interchange access location- SR 167

14. WIDEN SR 167 BY 1 LANE EACH DIRECTION TO KENT (STUDY AREA BOUNDARY)

Overview

SR 167 would be widened by one lane in each direction to accommodate additional demands due to growing demands and the effects of improvements at the I-405/SR 167 interchange. The widening is assumed to extend at least to the study area boundary in Kent. Alternative 3 will consider the potential to add a total of two lanes in each direction to SR 167 within 1 mile of I-405, due to the substantial capacity additions assumed for I-405. This element does not presume that SR 167 would be redesignated as I-405, although each of these improvements would be compatible with such a redesignation if it occurs.

16. IMPROVE CONNECTING FREEWAY CAPACITY TO I-405

Overview

Enhance the capacity of connecting freeways by one lane in each direction (for a distance of approximately ½ to 1 mile on both sides of I-405) to avoid bottlenecks at the connections to I-405.

Connecting Freeway Capacity (One Lane, Each Direction)		
Jurisdiction	Project ID	Projects
Tukwila	R.CF.1	SR 518 I-405 to SR 99/Airport Access
Bellevue	R.CF.3	I-90 South Bellevue to Eastgate
Bellevue	R.CF.4	SR 520 Bellevue Way to 148 th Avenue NE
Bothell, Woodinville	R.CF.5	SR 522 Bothell to NE 195th
Snohomish Co, Lynnwood	R.CF.6	SR 525 I-405 to SR 99
Renton, Kent	R.CF.8	SR 167 I-405 to Study Area Boundary
Tukwila	R.CF.9	I-5 at Tukwila
Lynnwood	R.CF.10	I-5 at Swamp Creek – 196 th to 164 th

17. IMPLEMENT PLANNED ARTERIAL IMPROVEMENTS

Overview

This major element involves the implementation of several arterial improvements called for in local agency plans and the Eastside Transportation Program (ETP). The ETP has been an ongoing process by regional, county and local governments to coordinate transportation planning and funding in East King County. Many of the ETP projects have already been examined in detail by the agencies involved and have been determined to be effective in addressing a variety of transportation issues.

Eastside Transportation Projects - Committed Projects		
Jurisdiction	Project ID	Projects
Bellevue	R-08	NE 29th PI (148th Ave NE to NE 24th St)/Construct new 2-lane road
Bellevue	R-101	150th Ave SE---Widen to 7 lanes from SE 36th to SE 38th; add turn lanes
KCDOT	R-40	Juanita-Woodinville Way (NE 145 St to 112th Ave NE) Widen to 5 lanes + CGS, walkway/pathway
KCDOT	R-47	NE 124 St (Willows Rd to SR 202)--- Widen to 4/5 lanes + CGS, bike facilities; traffic signal.
Kirkland	R-21	NE 120 St (Slater Ave to 124 Ave NE)--- Construct new 3-lane roadway with ped/bike facilities
Redmond	R-111	Willows Rd Corridor Improvements-- Channelization of Willows Rd/Redmond Way intersection and widening of Willows Rd from NE 116th to NE 124th
Redmond	R-26	NE 90 St (Willows Rd to SR 202)--- Construct new 4/5 lanes + bike facilities
Redmond	R-28	West Lake Sammamish Parkway (Leary Way to Bel-Red Rd)--- Widen to 4/5 lanes + CGS, bike lanes
Renton	R-36	Oakesdale Ave SW (SW 31st to SW 16th)--- Construct new 5 lane roadway with CGS
Snohomish Co.	R-10	SR 524 (24 St SW to SR 527)--- Widen to 4/5 lanes including sidewalks, bike lanes
Snohomish Co.	R-117	39th Ave SE Realignment at SR 524 and York Rd--- Construct 4-way intersection to replace 2 offset intersections
Bothell, Snohomish Co.	R.AC-21	120th NE/39th SE - NE 95th to Maltby Rd - 4/5 lanes including new connection
Woodinville	R-51	Woodinville-Snohomish Rd/140 Ave NE (NE 175 St to SR 522)--- Widen to 4/5 lanes + CGS, bike lanes
Woodinville/WSDOT	R-25	SR 202 Corridor Improvements(East Lake Sammamish Pkwy to Sahalee Way)--- Widen to 3/5 lanes; intersection improvements with bike/ped facilities
KCDOT	R-39	140 Ave SE (SR 169 to SE 208 St)--- Widen to 5 lanes SR 169 to SE 196 St, widen for turn channels on SE 196. Combines 2 King County CIP projects. A major North-South arterial which serves the Soos Creek Plateau and Fairwood.

Eastside Transportation Projects - Planned Projects		
Jurisdiction	ETP #	Projects
Bellevue	R.PA-2	148 Ave SE (SE 24 St to SE 28 St) New SB lane from SE 24 St to the WB I-90 on-ramp (ETP 203)
Bothell	R.PA-3	SR 522 Multimodal Corridor Project--- Widen SR-522 mostly within existing ROW to provide transit lanes, safety improvements, consolidated driveways & left turn lanes; and sidewalks. (ETP R-107)
Bothell	R.PA-4	SR 524 (SR 527 to Bothell City Limit)--- Widen to 5 lanes + CGS, bike facilities (class III) (ETP R-11)
KCDOT	R.PA-5	SE 212 Way/SE 208 St (SR 167 to Benson Rd/SR 515)--- Widen to 6 lanes + bike facilities, Transit/HOV preferential treatment, turn channels. (ETP R-46)
KCDOT	R.PA-8	NE 124/128 St (SR 202 to Avondale Rd)--- Widen to 4/5 lanes including bike & equestrian facilities (ETP 164)
KCDOT	R.PA-10	NE 132 St Extension (132 Ave NE to Willows Rd Ext.)---- Construct new 3 lane arterial with CGS, bike lanes (ETP 61)
Kenmore/KCDOT	R.PA-11	68 Ave NE (Simonds Rd to SR 522)--- Construct NB HOV lane total of 5/6 lanes (ETP 22)
Kirkland	R.PA-12	124 Ave NE (NE 85 St to Slater Rd NE)---- Widen to 3 lanes (s. of NE 116th St, 5 lanes n. of NE 116th St with ped/bike facilities (ETP R-23)
Kirkland	R.PA-13	NE 132 St (100 Ave NE to 116 Way NE)--- Widen to 3 lanes + CGS, Bike lane (ETP R-124)
Kirkland	R.PA-14	NE 100 St (117 Ave NE to Slater Ave) --- Construct bike/pedestrian/emergency Vehicle overpass across I-405 (ETP 309)
Newcastle	R.PA-15	Coal Creek Pkwy (SE 72 St to Renton City Limits)--- Widen to 4/5 lanes + CGS, bike lanes, traffic signals (ETP R-24)
Redmond	R.PA-16	Redmond 148th Ave NE Corridor - 3 projects--- Turn lane and channelization improvements along corridor – BROTS; (ETP R-112)
Redmond	R.PA-17	Bear Creek Pkwy--- Construct new 162nd Ave NE arterial and new 72nd St arterial w/ bike/ped and CSG; widen Bear Creek Pkwy (ETP R-110)
Redmond	R.PA-18	Union Hill Rd (Avondale Rd to 196 Ave NE)--- Widen to 4/5 lanes with bike facilities (ETP R-27)
Renton	R.PA-19	Duvall Ave NE (NE 4 St to NE 25 Court -City Limits)--- Widen to 5 lanes + CGS, bikeway (ETP R-31)
Renton	R.PA-20	Oakesdale Ave SW (Monster Rd to SR 900) Replace Monster Rd Bridge; widen to 4/5 lanes +Bike Lanes + CGS (ETP R-35)
Renton	R.PA-21	Rainier Ave / Grady Way (intersection)-- Grade separation (ETP R-33)

Eastside Transportation Projects - Planned Projects		
Renton	R.PA-22	SW Grady Way (SR 167 to SR 515)-- Rechannelize and modify signals for a continuous eastbound lane (ETP R-37)
Renton	R.PA-23	SR 167 at East Valley Road--- New southbound off-ramp and signalization at East Valley Road (ETP 255)
Renton/ KCDOT	R.PA-24	Soos Creek Regional Links --- Placeholder for Trans-Valley Study (ETP R-115)
Woodinville	R.PA-25	SR 522 Interchange Package(SR 522/SR 202 &SR522/195th St)-- Access improvements and new freeway ramps (ETP R-53) (See R.AC-30)
Woodinville	R.PA-26	SR202 Corridor Package (SR202/148th Ave & SR202/127th Place)--- Intersection improvements (ETP R-54)
WSDOT	R.PA-27	SR 520/SR 202 Interchange-- Complete interchange by constructing a new ramp and thru lane on 202 to SR 520 (ETP R-29)
WSDOT	R.PA-28	SR 202 / 140 Place NE (NE 124 St to NE 175 St)--- Widen 4/5 lanes (ETP R-43) (See R.AC-17, 18)

18. EXPAND CAPACITY ON NORTH-SOUTH ARTERIALS

Overview

This element expands arterial capacity to provide connected north-south travel. This element would facilitate vehicular movement without requiring as many trips along I-405.

North-South Arterial Projects		
King Co	R.AC-2	138th Ave - Petrovitsky Rd to SR 169- Add 1 lane
King Co, Renton	R.AC-3	138th Ave SE - Construct roadway link to 4/5 lanes- SR 169 to NE 4th St
Redmond	R.AC-15	Willows Rd- NE 90th St to NE 124th St- Add 1 lane each direction
King Co, Woodinville	R.AC-16	Willows Rd- NE 124th St to NE 145th St- construct new facility -4/5 lanes
Woodinville	R.AC-17	SR 202- NE 145th St to SR 522- widen to 5 lanes
Redmond, King County, Woodinville	R.AC-18	SR 202 - NE 90th to NE 145th
Bothell, Snohomish County, Mill Creek	R.AC-20	SR 527/Bothell Everett Hwy - SR 522 to SR 524 - Widen by 1 lane each direction
Bothell, Woodinville	R.AC-30	SR 202 connection across SR 522 to 120th
Tukwila	R.AC-35	SR 181- S 180th to S 200th
Tukwila	R.AC-36	SR 181- 144th to Strander Blvd.
Tukwila	R.AC-37	Southcenter Blvd - Tukwila Pky to Strander Blvd

19. UPGRADE ARTERIAL CONNECTIONS TO I-405

Overview

This element provides for upgrading arterial connections to I-405. These projects are intended to improve operations at on- and off-ramps as well as on the arterials themselves. An additional lane in each direction was assumed for these arterials, although further analysis may show that similar benefits could be achieved through selected intersection improvements in some cases.

Arterial Interchange Improvements (One Lane Each Direction)		
Jurisdiction	Project ID	Projects
Tukwila	R.IC-3	SR 181 West Valley Highway/ Interurban
Renton	R.IC-4	SR 169 Maple Valley Hwy SR 900 to NE 5th
Bellevue	R.IC-6	Coal Creek Pkwy I-405 to Factoria Blvd.
Kirkland, Redmond	R.IC-8	NE 85th St-Kirkland Way to 124th
Kirkland	R.IC-9	NE 116th- 114th Ave NE to 124th Ave NE
Kirkland	R.IC-10	NE 124th- 113th Ave NE to 124th Ave NE
Kirkland	R.IC-26	NE 132nd - 113th to 124th Ave NE
Bothell	R.IC-11	SR 527-228th to SR 524
Kirkland, King Co	R.IC-14	New half diamond interchange to/from north at NE 132nd St
Bothell	R.IC-21	New SR 405 Interchange at 240th Street SE(Bothell)
Bothell	R.IC-24	NE 160th Street-112th Ave to Juanita/Woodinville Way

21. CORRIDOR PEDESTRIAN AND BICYCLE IMPROVEMENTS

Overview

Non-motorized improvements throughout the corridor provide needed connections between modes (e.g. pedestrian overpasses from park and rides to freeway bus stops) and allow for commutes or trips to be made by walking or biking. Alternative 3 will exclude all of the ‘long-distance’ trails (identified below under the heading Pedestrian/Bicycle Connections) from this element. These improvements need further refinement in the context of other major elements in the alternatives.

Pedestrian/Bicycle (I-405 Crossings)		
Bellevue	NM. CR-1	Lk Washington Blvd/112th Ave. SE - crossing I-405 from 106th Ave. SE to 112th Place SE - Add sidewalks
Bothell	NM. CR-2	Fitzgerald Rd/27th Ave. - crossing I-405 from 228th St. SE to 240th St. SE - Add ped/bike facility
King County	NM. CR-3	SR-524 (Filbert Road) - crossing I-405 from North Rd to Locust Way - Add sidewalk/paved shoulder
King County	NM. CR-4	Damson Road - crossing I-405 from 192nd St SW to Logan Rd - Add sidewalk/paved shoulder
Renton	NM. CR-5	NE Park Drive - crossing I-405 from SR-900/Sunset Blvd to Lake Wash Blvd - Add sidewalk/paved shoulder
Renton	NM. CR-6	Jackson SW/Longacres Dr SW - crossing I-405 from S. Longacres Way to Monster Rd SW - Add sidewalk/paved shoulder
Bothell	NM. CR-7	Connection between Sammamish River Trail and North Creek Trail - between SR-522 and NE 195th St. - Add ped/bike over-crossing of I-405
Bothell	NM. CR-8	SR-527 - crossing I-405 from 220th St SE to 228th St SE - ped/bike facility

Pedestrian/Bicycle Connections		
Bellevue	NM.P&B-4	Lake Washington Blvd - SR 405 to SE 60th - Add ped/bike facilities
Bellevue, Kirkland	NM.P&B-2	BNSF Right of Way - SE 8th to Totem Lake - Add ped/bike facility.
Bellevue, Newcastle, Renton	NM.P&B-6	Lake Washington Blvd/112th - SE 60th to May Creek I/C - Add ped/bike facility
Bothell	NM.P&B-5	North Creek Trail Link - 240th to 232nd - Add ped/bike trail.
Renton	NM. P&B 14	Cedar River Trail S. Extension - I-405 to Burnett Ave - Add ped/bike facilities (ETP NM-17)
Renton	NM. P&B 15	Cedar River Trail/Lake Washington Blvd Connector - Cedar River Trail to Lk Wash Blvd Loop - Add ped/bike facilities (ETP NM-15)
Renton	NM. P&B 16	Cedar-Duwamish Trail Connection - I-405 to Interurban Ave. S. - Add ped/bike facilities
Renton	NM. P&B 17	I-405/SR-167 trail connection - Lind Ave. SE to Talbot Rd S. - Add trail connection
Renton/Tukwila	NM. P&B 18	I-405/I-5 - via or around I-405/I-5 interchange - Add ped/bike facilities
Tukwila	NM. P&B 19	SR-181/W. Valley Hwy - crossing I-405 from Strander Blvd to Fort Dent Way - Add bike lanes

22. I-405 CORRIDOR INTELLIGENT TRANSPORTATION SYSTEM ENHANCEMENTS

Overview

This major element provides ITS enhancements to facilitate more reliable traffic flow.

I-405 Corridor ITS Enhancements		
Jurisdiction	Project ID	Projects
Various	ITS.1	Add Camera Coverage to decrease TMC blind spots
Various	ITS.2	Complete Ramp Metering
Various	ITS.4	Dual Lane Ramp Metering
Various	ITS.5	Increased Incident Response
Various	ITS.6	Traffic adaptive control on arterials
Various	ITS.7	TIS before all major decision points
Various	ITS.8	WSDOT support of in-vehicle traffic information
Various	ITS.9	Arterial camera coverage

23. I-405 CORRIDOR FREIGHT ENHANCEMENTS

Overview

This major element focuses on improvements specific to freight movements. Note that freight will benefit as well from general purpose traffic expansion described in other elements.

I-405 Corridor Freight Enhancements		
Jurisdiction	Project ID	Projects
Renton	R.FR-10	Modify SR 167 Interchange for East to South Freight movements
Various	R.FR-11	Improve truck flow with ITS
Various	R.FR-23	Remote area for overnight freight parking and staging for early morning deliveries
Various	R.FR-26	Full depth shoulders for truck usage on key freeways and arterials)
Various	R.FR-27	Traveler Information System (TIS) on SR 167 for I-405 "options"
Various	R.FR-28	TIS on I-5 for SR 18/I-90; and 164th to I-405; and South 200th to I-405
Various	R.FR-29	Centralized fax/radio for real time congestion reporting for dispatchers and truck drivers. Leverage WSDOT video linkages (e.g., a "T-911" number).
Various	R.FR-30	Hours of operation and service periods optimized—"JIT" redefined for applicable service sectors (e.g. restaurants)
Various	R.FR-32	Light cargo delivery using Sound Transit service

APPENDIX B
Alternatives Project Matrix

APPENDIX B
I-405 Corridor Program EIS Alternatives Project Matrix

				Alternatives				
		Jurisdiction	ACTIONS	5	1	2	3	4
Element #				No Action	HCT/TDM	Mixed Mode with HCT/Transit Emphasis	Mixed Mode	General Capacity
10. Basic I-405 Improvement Projects								
	Renton	R.BI-1 & R.FR-10	SR 167 Interchange - Direct Connection with auxiliary lane SB SR 169 to SR 167		✓	✓	✓	✓
	Kirkland	R.BI-2	Continue NB climbing Lane from NE 70th to NE 85th and continue as auxiliary Lane to NE 116th		✓	✓		✓
	Kirkland	R.BI-3	SB auxiliary Lane NE 124th to NE 85th		✓	✓		✓
	Bellevue	R.BI-4	I-90 / Coal Creek Interchange		✓	✓	✓	✓
	Both, King Co, Kirk	R.BI-5	SB SR 522 to 124th continue climbing lane as an auxiliary lane		✓	✓		✓
	Bothell	R.BI-6	NB auxiliary lane SR 522 to SR 527		✓	✓		✓
	Renton	R.BI-7	Kennydale Hill climbing lane - SR 900 to 44th - NB 900 to 30th, SB 44th - 30th		✓	✓		✓
	Bellevue	R.BI-8	I-90 to Bellevue SB HOV direct connection to I-90 west		✓	✓		✓
	Bellevue	R.BI-9	NB auxiliary lane I-90 to NE 8th		✓	✓		✓
	Bellevue	R.BI-10	Increase SR 405 to Eastbound SR 520 Ramp capacity		✓	✓		✓
	Renton	R.BI-14	NB Auxiliary Lane I-5 to SR 167		✓	✓		✓
	Various	R.FR.24	Improve interchange geometrics at all major truck routes (WB-20 Design Criteria)		✓	✓	✓	✓
10. Committed Freeway Projects								
	Joint	R-17 & R-17(17)	I-90/SR 900 Interchange and SR 900 improvements/Interchange reconfiguration Outside of Study Area					
	Joint	R-19	I-90/Sunset Way Interchange/Complete interchange and upgrade nonmotorized connections. Outside of Study Area					
	WSDOT	R-55	I-405/SR 167 Interchange/Construct new southbound I-405-to-southbound SR 167 ramp modification.	✓	✓	✓	✓	✓
SR 405 Through Capacity (TC)								
11. Two additional GP lanes in each direction								
	Tukwila, Renton	R.TC-1	Two additional GP lanes in each direction - SR 5 Tukwila to SR 167				✓	
	Renton	R.TC-2	Two additional GP lanes in each direction - SR 167 to SR 900/North Renton I/C				✓	
	Renton, Nwcas, Bel	R.TC-3	Two additional GP lanes in each direction - SR 900/North Renton I/C to SR 90				✓	
	Bellevue	R.TC-4	Two additional GP lanes in each direction - SR 90 To SR 520				✓	
	Bellevue, Kirkland	R.TC-5	Two additional GP lanes in each direction - SR 520 to NE 70th				✓	
	Kirkland	R.TC-6	Two additional GP lanes in each direction - NE 70th to NE 124th				✓	
	Kirk, K C, Both	R.TC-7	Two additional GP lanes in each direction - NE 124th SR 522				✓	
	Bothell, Sno Co	R.TC-8	Two additional GP lanes in each direction - SR 522 to SR 527				✓	
	Sno Co	R.TC-9	Two additional GP lanes in each direction - SR 527 to SR 5 Swamp Creek				✓	
13. Express Lanes- 2 lanes each direction between major interchanges								
	Tukwila, Renton	R.TC-20 + R.TC-29a	Add Express lanes - SR 5 Tukwila to SR 167					✓
	Renton	R.TC-21	Add Express lanes - SR 167 to SR 900 North Renton					✓
	Ren, Nwcas, Bel	R.TC-22 + R.TC-33	Add Express lanes -SR 900 North Renton I/C to SR 90					✓
	Bellevue	R.TC-23	Add Express lanes - SR 90 to SR 520					✓
	Bellevue, Kirkland	R.TC-24 + R.TC-32	Add Express lanes - SR 520 to NE 70th					✓
	Kirkland	R.TC-25	Add Express lanes - NE 70th to NE 124th					✓
	Kirk, K C, Both	R.TC-26 + R.TC-31	Add Express lanes - NE 124th to SR 522					✓
	Bothell, Sno Co	R.TC-27	Add Express lanes - SR 522 to SR 527					✓
	Sno. Co	R.TC-29 + R.TC-30	Add Express Lanes - SR 527 to SR 5 Swamp Creek					✓
	Renton	R.TC-28	Add Express lanes- on SR 167 north of 180th up to I-405					✓

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APPENDIX B
I-405 Corridor Program EIS Alternatives Project Matrix

				Alternatives				
	Jurisdiction	ACTIONS		5	1	2	3	4
Element #				No Action	HCT/TDM	Mixed Mode with HCT/Transit Emphasis	Mixed Mode	General Capacity
13. Express Lanes - Access Locations								
	Tuk & Renton	R.TC-29a & R.TC-20	Southern end to Express lanes - Between SR 181 and SR 167					✓ *
	Snohomish Co	R.TC-30 & R.TC-29	Northern end to Express lanes - Between SR 527 and I-5					✓ *
	King Co,Kirkland	R.TC-31 & R.TC-26	Slip Ramp- South of NE 160th St					✓ *
	Kirkland	R.TC-32 & R.TC-24	Slip Ramp- South of NE 70th St					✓ *
	Bellevue, Newcastle	R.TC-33 & R.TC-22	Slip Ramp- South of Coal Creek Pkwy					✓ *
	Renton	R.TC-34	Interchange access location- SR 167					✓
14. Widen SR 167 by 1 lane each direction to study Area boundary								
	Renton, Kent	R.CF-8	SR 167 I-405 to Study Area Boundary			✓	✓	✓
14A. SR 167 / I-405 Interchange Improvements								
	Renton	R.FR-10 & R.BI-1	SR 167/I-405 Interchange Add Directional Ramps for major movements			✓ *	✓ *	✓ *
16. Connecting Freeway Capacity (Matched to fit I-405 Improvements)								
	Tukwila	R.CF-1	SR 518 I-405 to SR 99/Airport Access			✓	✓	✓
	Bellevue	R.CF-3	I-90 South Bellevue to Eastgate				✓	✓
	Bellevue	R.CF-4	SR 520 Bellevue Way to 148th					✓
	Bothell, Woodin	R.CF-5	SR 522 Bothell to NE 195th			✓	✓	✓
	Sno Co, Lynnwood	R.CF-6	SR 525 I-405 to SR 99			✓	✓	✓
	Tukwila	R.CF-9	I-5 at Tukwila			✓	✓	✓
	Lynnwood	R.CF-10	I-5 at Swamp Creek - 44th to 155th			✓	✓	✓
10A. One additional GP or Auxiliary lane in each direction								
	Tukwila,Renton	R.TC-9	One additional GP lanes in each direction - SR 5 Tukwila to SR 167			✓		✓
	Renton	R.TC-10	One additional GP lanes in each direction - SR 167 to SR 900/North Renton I/C			✓		✓
	Ren, Nwcas,Bel	R.TC-11	One additional GP lanes in each direction - SR 900/North Renton I/C to SR 90			✓		✓
	Bellevue	R.TC-12	One additional GP lanes in each direction - SR 90 To SR 520			✓		✓
	Bellevue,Kirkland	R.TC-13	One additional GP lanes in each direction - SR 520 to NE 70th (Verify need for additional through capacity on this section)			✓		✓
	Kirkland	R.TC-14	One additional GP lanes in each direction - NE 70th to NE 124th			✓		✓
	Kirk,K C,Both	R.TC-15	One additional GP lanes in each direction - NE 124th SR 522			✓		✓
	Bothell,Sno Co	R.TC-16	One additional GP lanes in each direction - SR 522 to SR 527			✓		✓
	Sno. Co	R.TC-17	One additional GP lanes in each direction - SR 527 to SR 5 Swamp Creek			✓		✓
18. Arterial Capacity (AC) Actions								
	King Co	R.AC-2 & R-39	138th Ave - Petrovitsky Rd to SR 169- Add 1 lane. See R-39					
	King Co, Renton	R.AC-3	138th Ave SE - Construct roadway link to 4/5 lanes- SR 169 to NE 4th St				✓	✓
	Ren, Nwcas,Bel	R.AC-4	140th Ave/Coal Creek Pkwy- Widen to 6 lanes to I-405					
	Redmond	R.AC-15 & R-111	Willows Rd- NE 90th St to NE 124th St- Add 1 lane each direction					✓ *
	King Co,Woodin	R.AC-16	Willows Rd- NE 124th St to NE 145th St- construct new facility -4/5 lanes				✓	✓
	Woodinville	R.AC-17 & R.PA-28	SR 202- NE 145th St to SR 522- widen to 5 lanes				✓ *	✓ *
	Red,K C,Woodin	R.AC-18 & R.PA-28	SR 202 - NE 90th to NE 145th					✓ *
	Ren, K C, Issaqu	R.AC-19 & R.IC-5	SR 900 - SR 405 to Edmonds. Additional capacity is not needed					
	Both,S C,Mill Cr	R.AC-20	SR 527/Bothell Everett Hwy - SR 522 to SR 524 - Widen by 1 lane each direction					✓
	Both,Woodin	R.AC-30 & R.PA-25	SR 202 connection across SR 522 to 120th				✓ *	✓ *
	Bothell	R.AC-34	120th Ave NE - SR 522 to NE 195th (4 lns existing additional not needed)					

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	Jurisdiction	ACTIONS		5	1	2	3	4
Element #				No Action	HCT/TDM	Mixed Mode with HCT/Transit Emphasis	Mixed Mode	General Capacity
	Tukwila	R.AC-35	SR 181- S 180th to S 200th					✓
	Tukwila	R.AC-36& R.IC-3	SR 181- 144th to Strander Blvd.					✓ *
	Tukwila	R.AC-37	Southcenter Pky - Tukwila Pky to Strander Blvd					✓
19.	Arterial Interchange Improvements (Matched to fit I-405 Improvements)							
	Tukwila	R.IC-3 & R.AC-36	SR 181 West Valley Highway/ Interurban See R.AC-36			✓	✓	✓
	Renton	R.IC-4 & R.HOV-43	SR 169 Maple Valley Hwy SR 900 to NE 5th See R.HOV-43			✓ *	✓ *	✓
	Renton	R.IC-5 & R.AC-19	SR 900/ Park - Lake Washington Blvd to Edmonds. Additional capacity is not needed.					
	Bellevue	R.IC-6	Coal Creek Pkwy I-405 to Factoria Blvd.	✓	✓	✓	✓	✓
	Kirkland, Redmond	R.IC-8	NE 85th St-Kirkland Way to 124th			✓	✓	✓
	Kirkland	R.IC-9	NE 116th- 114th Ave NE to 124th Ave NE			✓	✓	✓
	Kirkland	R.IC-10	NE 124th- 113th Ave NE to 124th Ave NE			✓	✓	✓
	Bothell	R.IC-11 & R.HOV-41	SR 527-228th to SR 524			✓	✓	✓
	Renton	R.IC-12 & R.HOV-33	Port Quendall overpass at SE 44th. See R.HOV-33					
	Kirk,King Co	R.IC-14	New half diamond interchange to/from north at NE 132nd St				✓	✓
	Bothell	R.IC-21	New SR 405 Interchange at 240th Street SE(Bothell)				✓	✓
	Bothell	R.IC-24 & R-40	NE 160th Street-112th Ave to Juanita/Woodinville Wy See R-40			✓ *	✓ *	✓ *
	Bothell	R.IC-25	NE 195th Street-Ross Rd to North Creek Pkwy (additional capacity not needed)					
	Kirkland	R.IC-26 & R.PA-13	NE 132nd - 113th to 124th Ave NE				✓ *	✓ *
12.	Collector Distributors (CD) Matched to fit I-405 Improvements							
	Renton	R.CD-1	SR-167, SR-169, Sunset and SR 900/North Renton;					
	Bellevue	R.CD-2	Coal Creek, SR 90, SE 8th, NE 4th, NE 8th and SR 520;					
	Kirkland	R.CD-3	NE 70th and NE 85th;					
	Kirkland	R.CD-4	NE 116th and NE 132nd;					
	Bothell, King Co	R.CD-5	NE 160th, SR-522 and SR 527					
	HOV (HOV)							
7.	Committed HOV Projects							
	Bellevue	HOV-01	I-405 at NE 4th/6th/8th (Bellevue) / Construct new HOV direct access at NE 6th, Improve arterial capacity at NE 4th/8th interchanges	✓	✓	✓	✓	✓
	Bellevue	HOV-02	I-90 (Eastgate) / New I-90 HOV direct access connection to P&R	✓	✓	✓	✓	✓
	WSDOT	HOV-14	I-405 (I-5 Swamp Creek to SR 527)/Construct NB and SB HOV lanes total 6 lanes	✓	✓	✓	✓	✓
	KCDOT	HOV-15	E Lk Samm Pkwy (Iss-Fall City Rd to I-90 on ramp)/Widen to 4/5 lanes + HOV lanes. Outside of Study Area					
	ST	HOV-101	I-405 @ Lind/HOV direct access improvements.				✓	
	ST	HOV-102, R.HOV-58 & R.PA-1	Woodinville Arterial Enhancements/HOV arterial enhancements	✓	✓	✓	✓	✓
	Renton	R.HOV-32	Between Sunset and SR-900 /Park Ave interchange in Renton	✓	✓	✓	✓	✓
	Renton	R.HOV-33 & R.IC-12	NE 44th I/C - HOV Direct Access and Arterial Improvements(Assumes Port Quendall)	✓	✓	✓	✓	✓
	Kirkland	R.HOV-61	NE 85th				✓	
	Bothell	R.HOV-62	SR 522 Campus Access	✓	✓	✓	✓	✓
	Bothell	R.HOV-63	SR 527	✓	✓	✓	✓	✓
	Tukwila	R.HOV-64	Southcenter (In-Line Station). In line station at this location has been dropped.					
	ST	R.HOV-66	I-405 at NE 128th St/HOV Direct Access Improvements	✓	✓	✓	✓	✓

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				Alternatives				
		Jurisdiction	ACTIONS	5	1	2	3	4
Element #				No Action	HCT/TDM	Mixed Mode with HCT/Transit Emphasis	Mixed Mode	General Capacity
7.	HOV Interchange Ramps (Direct Access)							
	Tukwila	R.HOV-25	SR 5 I/C @ Tukwila Fwy to Fwy HOV ramps,			✓	✓	✓
	Renton	R.HOV-26	SR 167 I/C Fwy to Fwy HOV ramps,			✓	✓	✓
	Bellevue	R.HOV-27	SR 90 I/C Fwy to Fwy HOV ramps,			✓	✓	✓
	Bellevue	R.HOV-28	SR 520 Fwy to Fwy HOV ramps,			✓	✓	✓
	Bothell	R.HOV-29	SR 522 Fwy to Fwy HOV Ramps			✓	✓	✓
	Sno. Co.	R.HOV-30	SR 5 I/C @ Swamp Creek Fwy HOV ramps.			✓	✓	✓
	Newcastle	R.HOV-65	112th St SE (In-Line Station)			✓		
6.	Arterial HOV							
	Bellevue	R.HOV-36	Coal Creek Pkwy from I-405 to Forest Drive		✓	✓	✓	
	Bellevue	R.HOV-37	NE 8th Street from I-405 to 120th Ave NE		✓	✓	✓	
	Kirk, Redmond	R.HOV-38	NE 85th St from Kirkland Way to 148th Ave NE Vicinity		✓	✓	✓	
	Kirkland	R.HOV-39	NE 116th from 115th Ave NE to 124th Ave NE		✓	✓	✓	
	Kirkland	R.HOV-40	NE 124th from 113th Ave NE to 132 Ave NE		✓	✓	✓	
	Bothell	R.HOV-41 & R.IC-11	SR 527 From SE 228th St to SR 524		✓	✓ *	✓ *	
	Renton	R.HOV-43 & R.IC-4	SR 169 from SR 405 to Riverview Park Vicinity - HOV/Transit Preferential treatment.		✓	✓	✓	
	Renton	R.HOV-44	SW 27th St Corridor in Renton from Oaksdale Ave to SR 167		✓	✓	✓	
	Redmond	R.HOV-47	Avondale Rd from Novelty Hill Rd to Avondale Way/ Construct SB HOV lane		✓	✓	✓	
	Renton, King Co	R.HOV-48	SW 43 St from SR 167 to 140 Ave SE		✓	✓	✓	
	Renton	R.HOV-49	Logan Ave N/N 6 St from S 3 St to Park Dr, Transit Signal Priority		✓	✓	✓	
	Renton	R.HOV-51	Park Dr/Sunset Blvd from Garden Ave to Duvall Ave NE, Que Bypass'		✓	✓	✓	
	Kenmore	R.HOV-53 & R.PA-11	68 Ave NE (Simonds Rd to SR 522) - Construct NB HOV lane		✓	✓	✓	
	Redmond	R.HOV-55	Willows Rd (Redmond Wy to NE 124 St)		✓	✓	✓	
	Kirkland, Bellevue	R.HOV-56	Lake Washington Blvd (SR 520 to Yarrow Bay) - HOV lanes		✓	✓	✓	
	Kirkland	R.HOV-57	NE 68 St/NE 72 Pl (I-405 Vicinity) Que Bypass'		✓	✓	✓	
	Bothell, Woodin	R.HOV-58, HOV-102 & R.PA-1	SR 522 (I-405 to SR 527 - Bothell) WB HOV Que Bypass - See HOV-102					
	Renton, King Co	R.HOV-59	Benson Rd - I-405 to SE Carr Rd - No Project					
	Bellevue	R.HOV-60	Bellevue Way - I-90 to South Bellevue Park and Ride Vicinity		✓	✓	✓	
23.	Freight (F)							
	Renton	R.FR-10 & R.BI-1	Modify SR 167 Interchange for East to South Freight movements		✓ *	✓ *	✓ *	
	Various	R.FR-11	Improve truck flow with ITS		✓	✓	✓	
	Various	R.FR-23	Remote area for overnight freight parking and staging for early morning deliveries		✓	✓	✓	
	Various	R.FR-26	Full depth shoulders for truck usage on key freeways and arterials)		✓	✓	✓	
	Various	R.FR-27	Traveler Information System (TIS) on SR 167 for I-405 "options"		✓	✓	✓	
	Various	R.FR-28	TIS on I-5 for SR 18/I-90; and 164th to I-405; and South 200th to I-405		✓	✓	✓	
	Various	R.FR-29	Centralized fax/radio for real time congestion reporting for dispatchers and truck drivers. Leverage WSDOT video linkages (e.g., a "T-911" number).		✓	✓	✓	
	Various	R.FR-30	Hours of operation and service periods optimized—"JIT" redefined for applicable service sectors (e.g. restaurants)		✓	✓	✓	
	Various	R.FR-32	Light cargo delivery using Sound Transit service		✓	✓	✓	
22.	Intelligent Transportation Systems (ITS)							
	Various	ITS-1	Add Camera Coverage to decrease TMC blind spots		✓	✓	✓	✓
	Various	ITS-2	Complete Ramp Metering		✓	✓	✓	✓
	Various	ITS-4	Dual Lane Ramp Metering		✓	✓	✓	✓

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	Jurisdiction	ACTIONS		5	1	2	3	4
Element #				No Action	HCT/TDM	Mixed Mode with HCT/Transit Emphasis	Mixed Mode	General Capacity
	Various	ITS-5	Increased Incident Response		✓	✓	✓	✓
	Various	ITS-6	Traffic adaptive control on arterials		✓	✓	✓	✓
	Various	ITS-7	TIS before all major decision points		✓	✓	✓	✓
	Various	ITS-8	WSDOT support of in-vehicle traffic information		✓	✓	✓	✓
	Various	ITS-9	Arterial camera coverage		✓	✓	✓	✓
4.	High Capacity Transit (Physically Separated, Fixed Guideway HCT)							
	Tuk. & Renton	T.HCT-1	HCT- SeaTac to Renton CBD		✓	✓		
	Renton	T.HCT-2	HCT-Renton CBD to NE 44th (Port Quendall)		✓	✓		
	Ren< New & Bel	T.HCT-3	HCT- NE 44th (Port Quendall) to Factoria		✓	✓		
	Bell & Issa	T.HCT-4	HCT - Factoria To Issaquah		✓	✓		
	Bellevue	T.HCT-5	HCT Factoria to Downtown Bellevue		✓	✓		
	Bell & Red	T.HCT-6	HCT - Bellevue to Redmond		✓	✓		
	Bell & Kirk	T.HCT-7	HCT- Bellevue to Totem Lake		✓	✓		
	Kirk & King Co	T.HCT-8	HCT - Totem Lake to Bothell		✓	✓		
	Various	T.HCT-9	HCT - Bothell to Lynnwood		✓	✓		
4.	High Capacity Transit (Bus rapid transit [BRT] operating improved access HOV lanes on the existing freeway system)							
	Tuk. & Renton	T.HCT-1	HCT- SeaTac to Renton CBD				✓	
	Renton	T.HCT-2	HCT-Renton CBD to NE 44th (Port Quendall)				✓	
	Ren< New & Bel	T.HCT-3	HCT- NE 44th (Port Quendall) to Factoria				✓	
	Bell & Issa	T.HCT-4	HCT - Factoria To Issaquah				✓	
	Bellevue	T.HCT-5	HCT Factoria to Downtown Bellevue				✓	
	Bell & Red	T.HCT-6	HCT - Bellevue to Redmond				✓	
	Bell & Kirk	T.HCT-7	HCT- Bellevue to Totem Lake				✓	
	Kirk & King Co	T.HCT-8	HCT - Totem Lake to Bothell				✓	
	Various	T.HCT-9	HCT - Bothell to Lynnwood				✓	
4.	High Capacity Transit Stations							
	Sea-Tac	HCT.TS-1	Sea-Tac (Outside of Study Area)					
	Tukwila	HCT.TS-2	Southcenter		✓	✓	✓	
	Tukwila & Renton	HCT.TS-3	Tukwila (Longacres)		✓	✓		
	Renton	HCT.TS-4	Downtown Renton		✓	✓	✓	
	Renton	HCT.TS-5	North Renton		✓	✓		
	Renton	HCT.TS-6	Port Quendall		✓	✓	✓	
	Bellevue	HCT.TS-7	Factoria		✓	✓	✓	
	Bellevue	HCT.TS-8	Bellevue Transit Center		✓	✓	✓	
	Bellevue	HCT.TS-9	Bellevue Library		✓	✓		
	Bell & Kirk	HCT.TS-10	SR 520/Northup Way		✓	✓	✓	
	Kirkland	HCT.TS-11	Downtown Kirkland (NE 85th Street)		✓	✓	✓	
	Kirkland	HCT.TS-12	Totem Lake		✓	✓	✓	
	Woodinville	HCT.TS-13	NE 145th Street		✓	✓		
	Woodinville	HCT.TS-14	Woodinville		✓	✓		
	Bothell	HCT.TS-15	NE 195th		✓	✓	✓	

APPENDIX B
I-405 Corridor Program EIS Alternatives Project Matrix

				Alternatives				
	Jurisdiction	ACTIONS		5	1	2	3	4
Element #				No Action	HCT/TDM	Mixed Mode with HCT/Transit Emphasis	Mixed Mode	General Capacity
	Bothell	HCT.TS-16	Canyon Park		✓	✓	✓	
	Sno County	HCT.TS-17	164th Street AW (AshWay)		✓	✓		
	Bellevue	HCT.TS-18	Eastgate		✓	✓	✓	
	King County	HCT.TS-19	Lakemont		✓	✓		
	Issaquah	HCT.TS-20	Issaquah 9Outside of Study area)					
	Bellevue	HCT.TS-21	132nd Avenue NE		✓	✓		
	Bellevue	HCT.TS-22	148th Avenue NE		✓	✓		
	Redmond	HCT.TS-23	Overlake (NE 40th Street)		✓	✓	✓	
	Redmond	HCT.TS-24	Redmond Town Center		✓	✓	✓	
	Redmond	HCT.TS-25	Bear Creek		✓	✓		
	Mercer Island	HCT.TS-26	Mercer Island		✓	✓	✓	
New Transit Service (TS)								
	Various	TS-0	Twenty percent more service than in the proposed 6-year plans for sound Transit, METRO and Community Transit	✓	✓	✓	✓	✓
	Various	TS-1	Fifty percent more service assumed in the current 6-year plans for Sound Transit, METRO and Community Transit					✓
3.	Transit Service (TS)							
	Various	TS-2	Twice the service in the proposed 6-year plans for Sound Transit, METRO and Community Transit		✓	✓	✓	
8.	Park and Rides (PR)							
	Renton	T.PR-3	Renton Highlands	✓	✓	✓	✓	✓
	Tukwila & Ren	T.PR-6	Tukwila Commuter Rail (Longacres)	✓	✓	✓	✓	✓
	K C	T.PR-8	SR 169 and 140th Place SE		✓	✓	✓	
	K C	T.PR-9	Petrovitsky Rd and 157th Ave SE		✓	✓	✓	
	K C	T.PR-10	140th Ave SE and SE 192nd		✓	✓	✓	
	K C	T.PR-11	SR 515 and SE 208th		✓	✓	✓	
	Kent & Renton	T.PR-12	SR 167 and SW 43rd		✓	✓	✓	
	Kent & Renton	T.PR-13	SR 167 and 84th Ave		✓	✓	✓	
	Redmond	T.PR-17	Willows Rd @ NE 100th		✓	✓	✓	
	Redmond	T.PR-18	SR 202 @ NE 100th		✓	✓	✓	
	Bell & Kirk	T.PR-20	South Kirkland	✓	✓	✓	✓	✓
	Redmond	T.PR-21	Overlake	✓	✓	✓	✓	✓
	Bellevue	T.PR-22	South Bellevue	✓	✓	✓	✓	✓
	Bellevue	T.PR-23	Newport (112th Ave. SE)	✓	✓	✓	✓	✓
	KC	T.PR-24	NE 160th/Brickyard Rd	✓	✓	✓	✓	✓
	Bothell	T.PR-25	Canyon Park (SR 405 and SR 527)	✓	✓	✓	✓	✓
	KC	T.PR-26	SR 202 @ NE 145th		✓	✓	✓	
	Tukwila	T.PR-30	Tukwila	✓	✓	✓	✓	✓
	Kirkland	T.PR-31	Houghton	✓	✓	✓	✓	✓
	Kirkland	T.PR-32	Kingsgate	✓	✓	✓	✓	✓
	Medina	T.PR-33	Evergreen Point	✓	✓	✓	✓	✓
	Bellevue	T.PR-34	Wilburton	✓	✓	✓	✓	✓
	King County	T.PR-35	Lakemont	✓	✓	✓	✓	✓
	Redmond	T.PR-36	Rendmond	✓	✓	✓	✓	✓
	Redmond	T.PR-37	Bear Creek	✓	✓	✓	✓	✓
	Bothell	T.PR-38	Bothell	✓	✓	✓	✓	✓

* Evaluated within another project

APPENDIX B
I-405 Corridor Program EIS Alternatives Project Matrix

				Alternatives				
	Jurisdiction	ACTIONS		5	1	2	3	4
Element #				No Action	HCT/TDM	Mixed Mode with HCT/Transit Emphasis	Mixed Mode	General Capacity
	Kenmore	T.PR-39	Northshore	✓	✓	✓	✓	✓
	Kenmore	T.PR-40	Kenmore	✓	✓	✓	✓	✓
	Woodinville	T.PR-41	Woodinville	✓	✓	✓	✓	✓
	Mercer Island	T.PR-42	Mercer Island	✓	✓	✓	✓	✓
	Bellevue	T.PR-43	Eastgate	✓	✓	✓	✓	✓
9.	Transit Centers (TC)							
	Renton	T.TC-6	Downtown Renton	✓	✓	✓	✓	✓
	Bellevue	T.TC-8	Downtown Bellevue	✓	✓	✓	✓	✓
	Redmond	T.TC-9	Overlake	✓	✓	✓	✓	✓
	Kirkland	T.TC-12	Downtown Kirkland	✓	✓	✓	✓	✓
	Kirkland	T.TC-14	Totem Lake	✓	✓	✓	✓	✓
1.	TDM (TDM)							
	Various	TDM-1	TDM Package		✓	✓	✓	✓
		TDM-2	Expanded TDM Package- Regional Congestion Pricing		✓			
	Pedestrian and Bicycle Facilities (P&B)							
21.	I-405 Crossings							
	Bellevue	NM. CR-1	Lk Washington Blvd/112th Ave. SE - crossing I-405 from 106th Ave. SE to 112th Place SE - Add sidewalks		✓	✓	✓	✓
	Bothell	NM. CR-2	Fitzgerald Rd/27th Ave. - crossing I-405 from 228th St. SE to 240th St. SE - Add ped/bike facility		✓	✓	✓	✓
	King County	NM. CR-3	SR-524 (Filbert Road) - crossing I-405 from North Rd to Locust Way - Add sidewalk/paved shoulder		✓	✓	✓	✓
	Sno. County	NM. CR-4	Damson Road - crossing I-405 from 192nd St SW to Logan Rd - Add sidewalk/paved shoulder		✓	✓	✓	✓
	Renton	NM. CR-5	NE Park Drive - crossing I-405 from SR-900/Sunset Blvd to Lake Wash Blvd - Add sidewalk/paved shoulder		✓	✓	✓	✓
	Renton	NM. CR-6	Jackson SW/Longacres Dr SW - crossing I-405 from S. Longacres Way to Monster Rd SW - Add sidewalk/paved shoulder		✓	✓	✓	✓
	Bothell	NM. CR-7	Connection between Sammamish River Trail and North Creek Trail - between SR-522 and NE 195th St. - Add ped/bike overcrossing of I-405		✓	✓	✓	✓
	Bothell	NM. CR-8	SR-527 - crossing I-405 from 220th St SE to 228th St SE - ped/bike facility		✓	✓	✓	✓
21.	Pedestrian/Bicycle Connections							
	Bellevue,Kirkland	NM.P&B-2	BNSF Right of Way - SE 8th to Totem Lake - Add ped/bike facility.		✓	✓	✓	
	Bellevue	NM.P&B-4	Lk Washington Blvd - SR 405 to SE 60th - Add ped/bike facilities		✓	✓	✓	
	Bothell	NM.P&B-5	North Creek Trail Link - 240th to 232nd - Add ped/bike trail.		✓	✓	✓	
	Bel,Nwcas,Ren	NM.P&B-6	Lk Washington Blvd/112th - SE 60th to May Creek I/C - Add ped/bike facility		✓	✓	✓	
	Renton	NM.P&B-14	Cedar River Trail S. Extension - I-405 to Burnett Ave - Add ped/bike facilities		✓	✓	✓	
	Renton	NM.P&B-15	Cedar River Trail/Lake Washington Blvd Connector - Cedar River Trail to Lk Wash Blvd Loop - Add ped/bike facilities		✓	✓	✓	
	Renton	NM.P&B-16	Cedar-Duwamish Trail Connection - I-405 to Interurban Ave. S. - Add ped/bike facilities		✓	✓	✓	
	Renton	NM.P&B-17	I-405/SR-167 trail connection - Lind Ave. SE to Talbot Rd S. - Add trail connection		✓	✓	✓	
	Renton/Tukwila	NM.P&B-18	I-405/I-5 - via or around I-405/I-5 interchange - Add ped/bike facilities		✓	✓	✓	✓
	Tukwila	NM.P&B-19	SR-181/W. Valley Hwy - crossing I-405 from Strander Blvd to Fort Dent Way - Add bike lanes		✓	✓	✓	✓
17.	Arterial Committed Projects		(Note: ID numbers are same as ETP ID's)					
	Bothell, Snohomish C	R.AC-21	120th NE/39th SE - NE 95th to Maltby Rd - 4/5 lanes including new connection	✓	✓	✓	✓	✓
	Bellevue	R-08	NE 29th PI (148th Ave NE to NE 24th St)/Construct new 2-lane road	✓	✓	✓	✓	✓

* Evaluated within another project

APPENDIX B

I-405 Corridor Program EIS Alternatives Project Matrix

				Alternatives				
	Jurisdiction	ACTIONS		5	1	2	3	4
Element #				No Action	HCT/TDM	Mixed Mode with HCT/Transit Emphasis	Mixed Mode	General Capacity
	Snohomish Co.	R-10	SR 524 (24 St SW to SR 527)--- Widen to 4/5 lanes including sidewalks, bike lanes	✓	✓	✓	✓	✓
	Bothell	R-13	Beardslee Blvd (Main St to I-405)Widen to 3 lanes+CGS (Project does not add capacity)					
	Joint	R-17 & R-17(10)	I-90/SR 900 Interchange and SR 900 improvements--- Interchange reconfiguration. Project is outside of the Study Area					
	Issaquah	R-18	Issaquah bypass (Issaquah-Hobart Rd to I-90)-- Construct new 4/5 lanes with separated ped/bike trail. Project is outside of the Study Area.					
	Kirkland	R-21	NE 120 St (Slater Ave to 124 Ave NE)--- Construct new 3-lane roadway with ped/bike facilities	✓				
	Redmond/ WSDOT	R-25	SR 202 Corridor Improvements(East Lake Sammamish Pkwy to Sahalee Way)--- Widen to 3/5 lanes; intersection improvements with bike/ped facilities	✓	✓	✓	✓	✓
	Redmond	R-26	NE 90 St (Willows Rd to SR 202)--- Construct new 4/5 lanes + bike facilities	✓	✓	✓	✓	✓
	Redmond	R-28	West Lake Sammamish Parkway (Leary Way to Bel-Red Rd)--- Widen to 4/5 lanes + CGS, bike lanes	✓	✓	✓	✓	✓
	Renton	R-36	Oakesdale Ave SW (SW 31st to SW 16th)--- Construct new 5 lane roadway with CGS	✓	✓	✓	✓	✓
	WSDOT	R-38	SR 522 (SR 9 to SR 2)--- Widen to 4 lanes					
	KCDOT	R-39 & R.AC-2	140 Ave SE (SR 169 to SE 208 St)--- Widen to 5 lanes SR 169 to SE 196 St, widen for turn channels on SE 196. Combines 2 King County CIP projects. A major North-South arterial which serves the Soos Creek Plateau and Fairwood.	✓	✓	✓	✓	✓
	KCDOT	R-40 & R.IC-24	Juanita-Woodinville Way (NE 145 St to 112th Ave NE) Widen to 5 lanes + CGS, walkway/pathway	✓	✓	✓	✓	✓
	KCDOT	R-41	East Lake Sammamish Pkwy (Issaquah-Fall City Rd to SE 56 St)--- Widen 4/5 lanes including bike facilities. Construct CGS; interconnect traffic signals. Project is outside of the Study Area.					
	Issaquah	R-42	Sammamish Plateau Access Road (I-90 to Iss.-Pine Lake Rd)-- Prepare EIS, construct new 5-lane arterial w/ CGS, bike lanes. Project is outside of the Study Area.					
	Sammamish	R-44	228 Ave SE (SE 24th to NE 8 St)--- Widen to 4/5 lanes + CGS, bike lanes. Planned in 2 phases. Project is outside of the Study Area.					
	KCDOT	R-45	Issaquah-Fall City Rd (Issaquah-Pine Lake Rd to Klahanie Dr) - Phase II & III--- Widen to 4/5 lanes + CGS, bike lanes. Project is outside of the Study Area.					
	KCDOT	R-47	NE 124 St (Willows Rd to SR 202)--- Widen to 4/5 lanes + CGS, bike facilities; traffic signal.	✓	✓	✓	✓	✓
	KCDOT	R-48	Avondale Rd (Tolt Pipeline to Woodinville-Duvall Rd)--- Widen to 3 lanes + walkway/pathway (Project does not add capacity)					
	Woodinville	R-51	Woodinville-Snohomish Rd/140 Ave NE (NE 175 St to SR 522)--- Widen to 4/5 lanes + CGS, bike lanes	✓	✓	✓	✓	✓
	KCDOT	R-52	Woodinville-Duvall Rd (NE 171st St to Avondale Rd)--- Widen to 5 lanes + shoulders (without widening towards Woodinville the added capacity can't be used)					
	Bellevue	R-101	150th Ave SE---Widen to 7 lanes from SE 36th to SE 38th; add turn lanes	✓	✓	✓	✓	✓
	Redmond	R-111 & R.AC-15	Willows Rd Corridor Improvements-- Channelization of Willows Rd/Redmond Way intersection and widening of Willows Rd from NE 116th to NE 124th	✓	✓	✓	✓	✓
	Snohomish Co.	R-117	39th Ave SE Realignment at SR 524 and York Rd--- Construct 4-way intersection to replace 2 offset intersections	✓	✓	✓	✓	✓
17.	Planned Arterial Projects							
	Sound Transit	R.PA-1, HOV-102 & R.HOV-58	SR 522 (Woodinville to Bothell)--- HOV enhancements (ETP 246) See HOV-102					
	Bellevue	R.PA-2	148 Ave SE (SE 24 St to SE 28 St) New SB lane from SE 24 St to the WB I-90 on-ramp (ETP 203)			✓	✓	✓
	Bothell	R.PA-3	SR 522 Multimodal Corridor Project--- Widen SR-522 mostly within existing ROW to provide transit lanes, safety improvements, consolidated driveways & left turn lanes; and sidewalks. (ETP R-107)			✓	✓	✓
	Bothell	R.PA-4	SR 524 (SR 527 to Bothell City Limit)--- Widen to 5 lanes + CGS, bike facilities (class III) (ETP R-11)			✓	✓	✓
	KCDOT	R.PA-5	SE 212 Way/SE 208 St (SR 167 to Benson Rd/SR 515)--- Widen to 6 lanes + bike facilities, Transit/HOV preferential treatment, turn channels. (ETP R-46)			✓	✓	✓
	KCDOT	R.PA-6	Petrovitsky Rd (143 Ave SE to 151 Ave SE) --- Widen to 5 lanes + CGS, bike lanes, traffic signal, interconnect (ETP 265). Project has already been constructed.					
	KCDOT	R.PA-7	Bear Creek Arterial (NE 80 St to Novelty Hill Rd)--- Corridor study and construction of new 3 lane arterial (ETP 141). Project is outside the study area					
	KCDOT	R.PA-8	NE 124/128 St (SR 202 to Avondale Rd)--- Widen to 4/5 lanes including bike & equestrian facilities (ETP 164)			✓	✓	✓
	KCDOT	R.PA-9	SE 208 St (116 Ave SE to 132 Ave SE)--- Widen to 4/5 lanes + CGS, bike lanes, traffic signal (ETP 263). Project has already been constructed.					

* Evaluated within another project

APPENDIX B
I-405 Corridor Program EIS Alternatives Project Matrix

				Alternatives				
		Jurisdiction	ACTIONS	5	1	2	3	4
Element #				No Action	HCT/TDM	Mixed Mode with HCT/Transit Emphasis	Mixed Mode	General Capacity
	KCDOT	R.PA-10	NE 132 St Extension (132 Ave NE to Willows Rd Ext.)--- Construct new 3 lane arterial with CGS, bike lanes (ETP 61)			✓	✓	✓
	Kenmore/KCDOT	R.PA-11 & R.HOV-53	68 Ave NE (Simonds Rd to SR 522)--- Construct NB HOV lane total of 5/6 lanes (ETP 22)			✓ *	✓ *	✓
	Kirkland	R.PA-12	124 Ave NE (NE 85 St to Slater Rd NE)--- Widen to 3 lanes (s. of NE 116th St, 5 lanes n. of NE 116th St with ped/bike facilities (ETP R-23)			✓	✓	✓
	Kirkland	R.PA-13 & R.IC-26	NE 132 St (100 Ave NE to 116 Way NE)--- Widen to 3 lanes + CGS, Bike lane (ETP R-124)			✓	✓	✓
	Kirkland	R.PA-14	NE 100 St (117 Ave NE to Slater Ave) --- Construct bike/pedestrian/emergency Vehicle overpass across I-405 (ETP 309)			✓	✓	✓
	Newcastle	R.PA-15	Coal Creek Pkwy (SE 72 St to Renton City Limits)--- Widen to 4/5 lanes + CGS, bike lanes, traffic signals (ETP R-24)			✓	✓	✓
	Redmond	R.PA-16	Redmond 148th Ave NE Corridor - 3 projects--- Turn lane and channelization improvements along corridor – BROTS;			✓	✓	✓
	Redmond	R.PA-17	Bear Creek Pkwy--- Construct new 162nd Ave NE arterial and new 72nd St arterial w/ bike/ped and CSG; widen Bear Creek Pkwy (ETP R-110)			✓	✓	✓
	Redmond	R.PA-18	Union Hill Rd (Avondale Rd to 196 Ave NE)--- Widen to 4/5 lanes with bike facilities (ETP R-27)			✓	✓	✓
	Renton	R.PA-19	Duvall Ave NE (NE 4 St to NE 25 Court -City Limits)--- Widen to 5 lanes + CGS, bikeway (ETP R-31)			✓	✓	✓
	Renton	R.PA-20	Oakesdale Ave SW (Monster Rd to SR 900) Replace Monster Rd Bridge; widen to 4/5 lanes +Bike Lanes + CGS (ETP R-35)			✓	✓	✓
	Renton	R.PA-21	Rainier Ave / Grady Way (intersection)-- Grade separation			✓	✓	✓
	Renton	R.PA-22	SW Grady Way (SR 167 to SR 515)--- Rechannelize and modify signals for a continuous eastbound lane (ETP R-37)			✓	✓	✓
	Renton	R.PA-23	SR 167 at East Valley Road--- New southbound off-ramp and signalization at East Valley Road (ETP 255)			✓	✓	✓
	Renton/ KCDOT	R.PA-24	Soos Creek Regional Links--- Placeholder for Trans-Valley Study (ETP R-115)			✓	✓	✓
	Woodinville	R.PA-25 & R.AC-30	SR 522 Interchange Package(SR 522/SR 202 &SR522/195th St)--- Access improvements and new freeway ramps (ETP R-53) (See R.AC-30)			✓	✓	✓
	Woodinville	R.PA-26	SR202 Corridor Package (SR202/148th Ave & SR202/127th Place)--- Intersection improvements (ETP R-54)			✓	✓	✓
	WSDOT	R.PA-27	SR 520/SR 202 Interchange --- Complete interchange by constructing a new ramp and thru lane on 202 to SR 520 (ETP R-29)			✓	✓	✓
	WSDOT	R.PA-28 & R.AC-17	SR 202 / 140 Place NE (NE 124 St to NE 175 St)--- Widen 4/5 lanes (ETP R-43) (See R.AC-17, 18)			✓	✓	✓
	WSDOT	R.PA-29	SR 202 (Sahalee Way to Bear Creek-Sammamish Arterial)-- Widen to 4/5 lanes (ETP 152). Project is outside the Study Area.					

APPENDIX C

Communications and Coordination

No specific correspondence was received. However, general coordination is presented in Section 3.3 of this report.

APPENDIX D
EIS Alternatives –
Potential Flood Storage Impacts
To Be Mitigated

APPENDIX D

I-405 Corridor Program

EIS Alternatives - Potential Flood Storage Impacts to be Mitigated

			Alternatives																	
JURISDICTION			ACTIONS			5			1			2			3			4		
Element #					No Action			HCT/TDM			Mixed Mode with HCT/Transit Emphasis			Mixed Mode			General Capacity			
					Project	Crossings	Impact Length	Project	Crossings	Impact Length	Project	Crossings	Impact Length	Project	Crossings	Impact Length	Project	Crossings	Impact Length	
10.	Basic I-405 Improvement Projects																			
	Renton	R.BI.1						1	1	1400	1	1	1400	1	1	1400	1	1	1400	
	Kirkland	R.BI.2						1			1						1			
	Kirkland	R.BI.3						1			1						1			
	Bellevue	R.BI.4						1	1	200	1	1	200	1	1	200	1	1	200	
	Both,King Co,Kirk	R.BI.5						1			1						1			
	Bothell	R.BI.6						1			1						1			
	Renton	R.BI.7						1	1	100	1	1	100				1	1	100	
	Bellevue	R.BI.8						1	1	100	1	1	100				1	1	100	
	Bellevue	R.BI.9						1			1						1			
	Bellevue	R.BI.10						1			1						1			
	Renton	R.BI.14						1			1						1			
	Various	R.FR-24						1			1			1			1			
10.	Committed Freeway Projects																			
	WSDOT	R-55	1	1	5700															
	SR 405 Through Capacity (TC)																			
11.	Two additional GP lanes in each direction																			
	Tukwila,Renton	R.TC-1												1	2	2750				
	Renton	R.TC-2												1	1	1400				
	Renton, Nwcas,Bel	R.TC-3												1	2	300				
	Bellevue	R.TC-4												1	1	100				
	Bellevue,Kirkland	R.TC-5												1						
	Kirkland	R.TC-6												1						
	Kirk,K C,Both	R.TC-7												1	1	100				
	Bothell,Sno Co	R.TC-8												1	1	2100				
	Sno Co	R.TC-9												1	1	100				
13.	Express Lanes- 2 lanes each direction between major interchanges																			
	Tukwila,Renton	R.TC-20															1	2	2750	
	Renton	R.TC-21															1	1	1400	
	Ren, Nwcas,Bel	R.TC-22															1	2	300	
	Bellevue	R.TC-23															1	1	100	

APPENDIX D

I-405 Corridor Program

EIS Alternatives - Potential Flood Storage Impacts to be Mitigated

				Alternatives																
		JURISDICTION		ACTIONS		5			1			2			3			4		
Element #				No Action			HCT/TDM			Mixed Mode with HCT/Transit Emphasis			Mixed Mode			General Capacity				
				Project	Crossings	Impact Length	Project	Crossings	Impact Length	Project	Crossings	Impact Length	Project	Crossings	Impact Length	Project	Crossings	Impact Length		
		Bellevue,Kirkland	R.TC-24													1				
		Kirkland	R.TC-25													1				
		Kirk,K C,Both	R.TC-26													1	1	100		
		Bothell,Sno Co	R.TC-27													1	1	2100		
		Sno. Co	R.TC-29													1	1	100		
		Renton	R.TC-28													1	0	2500		
13. Express Lanes - Access Locations																				
		Tuk & Renton	R.TC-29													1				
		Snohomish Co	R.TC-30													1				
		King Co,Kirkland	R.TC-31													1				
		Kirkland	R.TC-32													1				
		Bellevue, Newcastle	R.TC-33													1				
		Renton	R.TC-34													1				
14. Widen SR 167 by 1 lane each direction to study Area boundary																				
		Renton, Kent	R.CF.8							1			1			1				
14A. SR 167 / I-405 Interchange Improvements																				
		Renton	R.FR-10							1			1			1				
16. Connecting Freeway Capacity (Matched to fit I-405 Improvements)																				
		Tukwila	R.CF.1							1			1			1				
		Bellevue	R.CF.3																	
		Bellevue	R.CF.4																	
		Bothell, Woodin	R.CF.5							1	3	250	1	3	250	1	3	250		
		Sno Co, Lynnwood	R.CF.6							1			1			1				
		Tukwila	R.CF.9							1			1			1				
		Lynnwood	R.CF.10							1			1			1				
10A. One additional GP or Auxiliary lane in each direction																				
		Tukwila,Renton	R.TC-9							1	2	2750				1	2	2750		
		Renton	R.TC-10							1	1	1400				1	1	1400		
		Ren, Nwcas,Bel	R.TC-11							1	2	300				1	2	300		
		Bellevue	R.TC-12							1	1	100				1	1	100		
		Bellevue,Kirkland	R.TC-13							1						1				
		Kirkland	R.TC-14							1						1				

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I-405 Corridor Program

EIS Alternatives - Potential Flood Storage Impacts to be Mitigated

				Alternatives																
		JURISDICTION		ACTIONS		5			1			2			3			4		
Element #				No Action			HCT/TDM			Mixed Mode with HCT/Transit Emphasis			Mixed Mode			General Capacity				
				Project	Crossings	Impact Length	Project	Crossings	Impact Length	Project	Crossings	Impact Length	Project	Crossings	Impact Length	Project	Crossings	Impact Length		
		Kirk,K C,Both	R.TC-15							1	1	100				1	1	100		
		Bothell,Sno Co	R.TC-16							1	1	2100				1	1	2100		
		Sno. Co	R.TC-17							1	1	100				1	1	100		
18.	Arterial Capacity (AC) Actions																			
		King Co	R.AC-2 & R-39																	
		King Co, Renton	R.AC-3										1	1	300	1	1	300		
		Redmond	R.AC-15 & R-111													1				
		King Co,Woodin	R.AC-16										1			1				
		Woodinville	R.AC-17 & R.PA-28										1			1				
		Red,K C,Woodin	R.AC-18 & R.PA 28													1				
		Both,S C,Mill Cr	R.AC-20													1				
		Both,Woodin	R.AC-30 & R.PA.25										1			1				
		Tukwila	R.AC-35													1				
		Tukwila	R.AC-36& R.IC-3													1	1	900		
		Tukwila	R.AC-37													1				
19.	Arterial Interchange Improvements (Matched to fit I-405 Improvements)																			
		Tukwila	R.IC-3 & R.AC-36							1			1			1				
		Renton	R.IC-4 & R.HOV-43							1			1			1				
		Bellevue	R.IC-6	1																
		Kirkland, Redmond	R.IC-8							1			1			1				
		Kirkland	R.IC-9							1			1			1				
		Kirkland	R.IC-10							1			1			1				
		Bothell	R.IC-11							1	1	100	1	1	100	1	1	100		
		Kirk,King Co	R.IC-14							1			1			1				
		Bothell	R.IC-21																	
		Bothell	R.IC-24 & R-40							1			1			1				
		Kirkland	R.IC-26 & R.PA-13										1			1				
12.	Collector Distributors (CD) Matched to fit I-405 Improvements																			
		Renton	R.CD-1																	
		Bellevue	R.CD-2																	
		Kirkland	R.CD-3																	
		Kirkland	R.CD-4																	
		Bothell, King Co	R.CD-5																	

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EIS Alternatives - Potential Flood Storage Impacts to be Mitigated

				Alternatives																
		JURISDICTION		ACTIONS		5			1			2			3			4		
Element #				No Action			HCT/TDM			Mixed Mode with HCT/Transit Emphasis			Mixed Mode			General Capacity				
				Project	Crossings	Impact Length	Project	Crossings	Impact Length	Project	Crossings	Impact Length	Project	Crossings	Impact Length	Project	Crossings	Impact Length		
		HOV (HOV)																		
7.		Committed HOV Projects																		
		Bellevue	HOV-01	1																
		Bellevue	HOV-02	1																
		WSDOT	HOV-14	1									1							
		ST	HOV-101																	
		ST	HOV-102, R.HOV.58 & R.PA.1	1																
		Renton	R.HOV-32	1																
		Renton	R.HOV-33 & R.I	1																
		Kirkland	R.HOV-61										1							
		Bothell	R.HOV-62	1																
		Bothell	R.HOV-63	1																
		ST	R.HOV-66	1																
7.		HOV Interchange Ramps (Direct Access)																		
		Tukwila	R.HOV-25							1			1			1				
		Renton	R.HOV-26							1			1			1				
		Bellevue	R.HOV-27							1			1			1				
		Bellevue	R.HOV-28							1			1			1				
		Bothell	R.HOV-29							1			1			1				
		Sno. Co.	R.HOV-30							1			1			1				
		Newcastle	R.HOV-65							1										
6.		Arterial HOV																		
		Bellevue	R.HOV-36				1			1			1							
		Bellevue	R.HOV-37				1			1			1							
		Kirk, Redmond	R.HOV-38				1			1			1							
		Kirkland	R.HOV-39				1			1			1							
		Kirkland	R.HOV-40				1			1			1							
		Bothell	R.HOV-41				1	1	100	1	1	100	1	1	100					
		Renton	R.HOV-43 & R.IC-4				1	0	2000	1	0	2000	1	0	2000					
		Renton	* R.HOV-44				1	1	3300	1	1	3300	1	1	3300					
		Redmond	R.HOV-47				1	0	1400	1	0	1400	1	0	1400					
		Renton, King Co	R.HOV-48				1			1			1							

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EIS Alternatives - Potential Flood Storage Impacts to be Mitigated

			Alternatives														
			5			1			2			3			4		
Element #			No Action			HCT/TDM			Mixed Mode with HCT/Transit Emphasis			Mixed Mode			General Capacity		
			Project	Crossings	Impact Length	Project	Crossings	Impact Length	Project	Crossings	Impact Length	Project	Crossings	Impact Length	Project	Crossings	Impact Length
		Renton	R.HOV-49			1			1			1					
		Renton	R.HOV-51			1			1			1					
		Kenmore	R.HOV-53 & R.PA.11			1	1	300	1	1	300	1	1	300			
		Redmond	R.HOV-55			1			1			1					
		Kirkland, Bellevue	R.HOV-56			1			1			1					
		Kirkland	R.HOV-57			1			1			1					
		Bellevue	R.HOV-60			1			1			1					
23.	Freight (F)																
		Renton	R.FR-10 & R.BI.1			1			1			1					
		Various	R.FR-11			1			1			1					
		Various	R.FR-23			1			1			1					
		Various	R.FR-26			1			1			1					
		Various	R.FR-27			1			1			1					
		Various	R.FR-28			1			1			1					
		Various	R.FR-29			1			1			1					
		Various	R.FR-30			1			1			1					
		Various	R.FR-32			1			1			1					
22.	Intelligent Transportation Systems (ITS)																
		Various	ITS.1			3			3			3			3		
		Various	ITS.2			3			3			3			3		
		Various	ITS.4			3			3			3			3		
		Various	ITS.5			3			3			3			3		
		Various	ITS.6			3			3			3			3		
		Various	ITS.7			3			3			3			3		
		Various	ITS.8			3			3			3			3		
		Various	ITS.9			3			3			3			3		
4.	High Capacity Transit																
		Tuk. & Renton	T.HCT-1			1	2	2750	1	2	2750	1	2	2750			
		Renton	T.HCT-2			1	1	100	1	1	100	1	1	100			
		Ren< New & Bel	T.HCT-3			1	1	200	1	1	200	1	1	200			
		Bell & Issa	T.HCT-4			1	4	3400	1	4	3400	1	4	3400			
		Bellevue	T.HCT-5			1			1			1					
		Bell & Red	T.HCT-6			1			1			1					

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EIS Alternatives - Potential Flood Storage Impacts to be Mitigated

				Alternatives																
		JURISDICTION		ACTIONS		5			1			2			3			4		
Element #				No Action			HCT/TDM			Mixed Mode with HCT/Transit Emphasis			Mixed Mode			General Capacity				
				Project	Crossings	Impact Length	Project	Crossings	Impact Length	Project	Crossings	Impact Length	Project	Crossings	Impact Length	Project	Crossings	Impact Length		
		Bell & Kirk	T.HCT-7				1			1			1							
		Kirk & King Co	T.HCT-8				1			1			1							
		Various	T.HCT-9				1			1			1							
4.	High Capacity Transit Stations						24			24			14							
New Transit Service (TS)				1												1				
3.	Transit Service (TS)						1			1			1							
8.	Park and Rides (PR)			23			9			9			9							
9.	Transit Centers (TC)			5																
1.	TDM (TDM)						2			1			1			1				
	Pedestrian and Bicycle Facilities (P&B)																			
21.	I-405 Crossings																			
		Bellevue	NM. CR-1				1			1			1			1				
		Bothell	NM. CR-2				1	1	200	1	1	200	1	1	200	1	1	200		
		King County	NM. CR-3				1			1			1			1				
		Sno. County	NM. CR-4				1			1			1			1				
		Renton	NM. CR-5				1			1			1			1				
		Renton	NM. CR-6				1			1			1			1				
		Bothell	NM. CR-7				1	1	50	1	1	50	1	1	50	1	1	50		
		Bothell	NM. CR-8				1			1			1			1				
21.	Pedestrian/Bicycle Connections																			
		Bellevue,Kirkland	NM.P&B-2				1			1			1							
		Bellevue	NM.P&B-4				1			1			1							
		Bothell	NM.P&B-5				1			1			1							
		Bel,Nwcas,Ren	NM.P&B-6				1			1			1							
		Renton	NM.P&B-14				1	0	2000	1	0	2000	1	0	2000					
		Renton	NM.P&B-15				1			1			1							
		Renton	NM.P&B-16				1			1			1							

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EIS Alternatives - Potential Flood Storage Impacts to be Mitigated

			Alternatives																	
JURISDICTION			ACTIONS			5			1			2			3			4		
Element #					No Action			HCT/TDM			Mixed Mode with HCT/Transit Emphasis			Mixed Mode			General Capacity			
					Project	Crossings	Impact Length	Project	Crossings	Impact Length	Project	Crossings	Impact Length	Project	Crossings	Impact Length	Project	Crossings	Impact Length	
		Renton		NM.P&B-17				1	0	100	1	0	100	1	0	100	1			
		Renton/Tukwila		NM.P&B-18				1			1			1			1			
		Tukwila		NM.P&B-19				1			1			1			1			
17.	Arterial Committed Projects																			
		Bothell, Snohomish Co.		R.AC-21	1		1000													
		Bellevue		R-08	1															
		Snohomish Co.		R-10	1															
		Kirkland		R-21	1															
		Redmond/ WSDOT		R-25	1	2	2800													
		Redmond	*	R-26	1	1	1250													
		Redmond		R-28	1															
		Renton	*	R-36	1		2100													
		KCDOT		R-39 & R.AC.2	1															
		KCDOT		R-40 & R.IC-24	1															
		KCDOT	*	R-47	1	1	1100													
		Woodinville		R-51	1															
		Bellevue		R-101	1															
		Redmond		R-111 & R.AC.1	1															
		Snohomish Co.		R-117	1															
17.	Planned Arterial Projects																			
		Bellevue		R.PA-2							1			1			1			
		Bothell		R.PA-3							1	1	75	1	1	75	1	1	75	
		Bothell		R.PA-4							1			1			1			
		KCDOT		R.PA-5							1			1			1			
		KCDOT		R.PA-8							1			1			1			
		KCDOT		R.PA-10							1			1			1			
		Kenmore/KCDOT		R.PA-11 & R.HOV.53							1			1			1			
		Kirkland		R.PA-12							1			1			1			
		Kirkland		R.PA-13 & R.IC-26							1			1			1			
		Kirkland		R.PA-14							1			1			1			
		Newcastle		R.PA-15							1			1			1			
		Redmond		R.PA-16							1			1			1			
		Redmond		R.PA-17							1	0	1700	1	0	1700	1	0	1700	
		Redmond		R.PA-18							1	2	900	1	2	900	1	2	900	
		Renton		R.PA-19							1			1			1			
		Renton		R.PA-20							1	1	50	1	1	50	1	1	50	

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EIS Alternatives - Potential Flood Storage Impacts to be Mitigated

				Alternatives														
		JURISDICTION	ACTIONS	5			1			2			3			4		
Element #				No Action			HCT/TDM			Mixed Mode with HCT/Transit Emphasis			Mixed Mode			General Capacity		
				Project	Crossings	Impact Length	Project	Crossings	Impact Length	Project	Crossings	Impact Length	Project	Crossings	Impact Length	Project	Crossings	Impact Length
		Renton	R.PA-21							1			1			1		
		Renton	R.PA-22							1			1			1		
		Renton	R.PA-23							1			1			1		
		Renton/ KCDOT	R.PA-24							1			1			1		
		Woodinville	R.PA-25 & R.AC.30							1	2	2700	1	2	2700	1	2	2700
		Woodinville	R.PA-26							1			1			1		
		WSDOT	R.PA-27							1			1			1		
		WSDOT	R.PA-28 & R.AC-17							1			1			1		
Total				55	5	13,950	125	17	17,700	179	36	30,325	166	35	30,425	129	36	25,225
No. of Projects Impacting Floodplains						6			17			31			30			30